Service manual for SAF Axles Types

SK RS / RZ 12242
K RZ / K ERZ 14242 / 16242
Leaf-Spring Suspensions
Tandem-Bogies

Edition 01/2006

SAF Service

Manufacturer.....

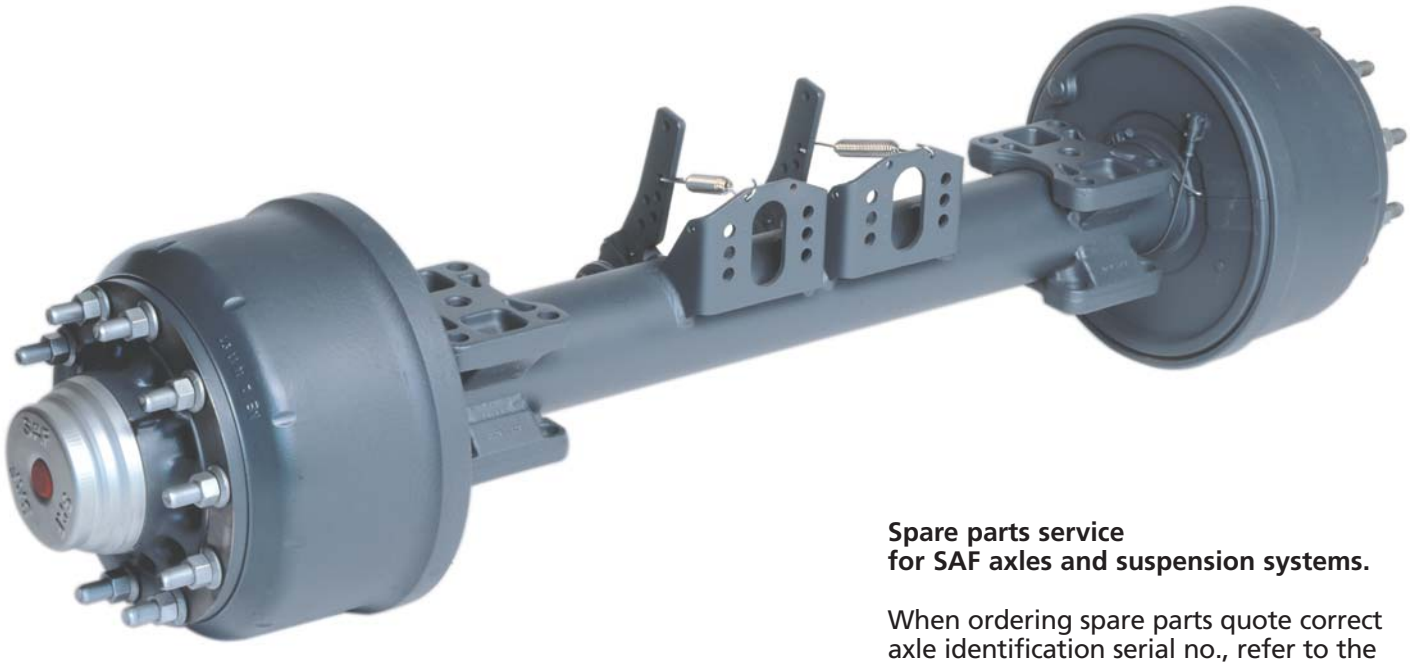
Address.....

Body type.....

Chassis no.....

Year of manufacture .....

Registration, date-in-service.....

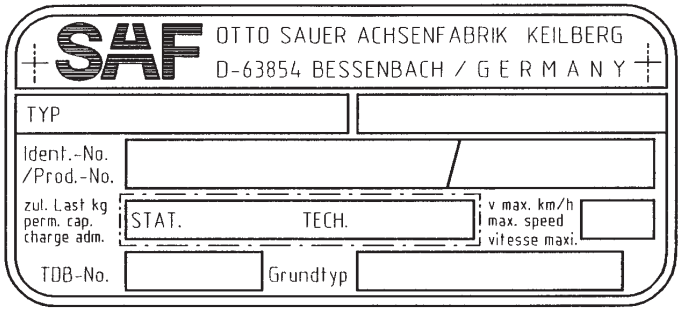


Spare parts service
for SAF axles and suspension systems.

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Please enter the axle identification figures in the type plates shown below so that correct specifications are available when required.

Type plate for axle identification



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The item numbers indicated are given only for identification and to distinguish between different versions.

Use the part numbers from the valid spare parts documents for identification of spare parts.

SAF axles and suspension units are subject to continuous further development; the data and drawings contained in the manual may therefore vary in details.

The contents of the manual does not constitute the basis for a legal claim.

Reprinting, reproduction or translation in whole or in part is not permitted.

The issue of this publication invalidates all earlier maintenance and repair manuals.

Please observe the following safety instructions in order to maintain the operational and road safety of your SAF axles and suspension systems:

1. The wheel contact surfaces between the wheel disc and wheel hub and the wheel nut contact surface at the wheel disc must not be additionally painted. The contact surfaces must be clean, smooth and free from grease. Failure to observe this may result in the wheel coming loose. Any additional instructions of the wheel manufacturer must also be observed.
2. Only the wheel and tyre sizes approved by the trailer builder may be used. The tyres must always have the specified inflation pressure.
3. The brake systems of the tractor and the trailer/semi-trailer must be synchronised by means of a tractor/trailer brake synchronisation not later than 5,000 km after the initial start of operation of the trailer/semi-trailer in order to ensure a safe and uniform braking behaviour and uniform brake pad wear. Tractor/trailer brake synchronisations should be carried out by appropriately qualified and equipped brake workshops.

   The use of an additional braking system, such as a trailer anti-jackknife brake is forbidden by law on vehicles with type approval after January 1999.
4. Before starting a journey, ensure that the maximum permissible axle load is not exceeded and that the load is distributed equally and uniformly.
5. On trailers with air suspension, ensure that the air bags are completely filled with air before starting the journey. Incompletely filled air bags may result in damage to axles, suspension, frame and superstructure and impair road safety.
6. Ensure that the brakes are not overheated by continuous operation.

   With drum brakes, overheating can result in a hazardous deterioration in the braking efficiency.

   With disc brakes, overheating can result in damage to surrounding components – in particular the wheel bearings. This can result in a significant deterioration in road safety, e.g. failure of wheel bearings.
7. The parking brake must not be immediately applied when the brakes are hot, as the brake discs and brake drums may be damaged by different stress fields during cooling.
8. Use the supports provided when loading and unloading in order to avoid damage to the axle.
9. Observe the operating recommendation of the trailer builder for off-road operation of the installed axles and suspension systems.

   The SAF definition of OFF-ROAD means driving on non-asphalted / non-concreted routes, such as e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits.

   Off-road operation of SAF axles and suspension systems not designed for the purpose may result in damage and hence to an impairment of road safety.
10. SAF axles and suspension systems require continuous care, service and maintenance in order to maintain operational and road safety and to be able to recognise natural wear and defects in good time.

    The daily inspection of the trailer for road safety before starting the journey is one of the driver's obligations.

    SAF recommends that at least the inspections and maintenance operations described on page 6 should be carried out.

We recommend the use of original SAF spare parts.

A close-knit service network of SAF partner companies is available for the technical support of the SAF axles and suspension systems and for the supply of original SAF spare parts (see rear cover or on the Internet under www.saf-axles.com).

Updates will be published as necessary on the Internet under www.saf-axles.com.

- **Caution:** After every wheel change, always retighten the wheel nuts to the prescribed torque after 50 km and again after 150 km.
- Check the brake lining thickness at regular intervals.
- Carry out general visual inspections of the brakes, tyres and all suspension components at regular intervals and check for proper attachment, wear, leaks, corrosion and damage.
- Carry out regular visual inspections of the wheel bearing unit for grease leaks and axial clearance.
  Wheel bearing grease change, see pages 9 and 13.
- Regularly check the camshaft for smooth return and the slack adjuster for proper function.
- Lubricate the camshaft at regular intervals.
- Inspect the brake drum for wear* and cracking at every brake lining change.
  Minimum wear limits*, see pages 9 and 13.
- Replace the brake shoe return springs at every brake lining change.
- On all units, check that the bolts of the U-brackets are tightened to the prescribed torques.
- Carry out a general safety check in accordance with the statutory provisions.
- We recommend the use of original SAF spare parts.

* We recommend that a general safety check is carried out when the minimum wear limit is reached.

for SAF Axles Types SK RS/RZ/RZT 12242

for suspensions refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Attention: Torque check wheel nuts after the first 50 km and 150 km (repeat also after every wheel removal).		●			
Torque check all nuts and bolts to recommended setting.		●		●	
Check and adjust hub end-float (if required).		●		●	
Pack wheel bearings with fresh grease after 300,000 km or 36 months, whichever comes first. Check condition of taper roller bearings and replace, if necessary.					
Lubricate camshaft bearing bushs.		●		●	
Lubricate suspension components, follow to individual suspension type maintenance instructions.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage Check brake linings for wear **Check camshafts for free rotation** Check slack adjusters for correct function Check air brake system for leaks (brake applied) Check leaf springs for damage, scoring and corrosion Check tyres for uneven wear and axles for correct tracking do readjustment if necessary		●	●		
Safety inspection					
Check brake lining to drum clearance for correct adjustment readjust clearance if necessary. Check service brake and parking brake for performance.		●	●		
Check truck-trailer combination for compatibiliy of service brake pessure. Check service brake pressure to manufacturer's specification. Adjust LSV output pressure, if found incorrect setting.		●			●
Check suspension ride height in laden condition if excessive trailer slope is obvious consult trailer manufacturer repeat check of trailer slope after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals

e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

for SAF Axles Types SK RS/RZ/RZT 12242

Hub end-float setting

Tighten hub nut (22) to a torque of 150 Nm at the same time rotating the hub and drum.

Locate the locking collar (23) onto the dowel on the hub nut noting the position of the dowel in relation to the collar. Remove the collar and turn the hub nut 2 1/2 holes anti-clockwise. Reverse the collar and re-locate it onto the repositioned hub nut dowel.

Fit the lock nut (24) and tighten using a torque of 400 Nm.

Check whether the hub rotates freely and without excessive end-float (repeat adjustment if necessary).

Replace O-ring (39) and fit the hub cap.

Lubricant specification:

Wheel bearings:
SAF parts no. 4 387 0011 05

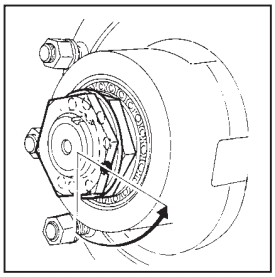
Camshaft:
SAF parts no. 4 387 0011 05

Stub axle:
SAF parts no. 4 387 0015 06
SAF fitting paste

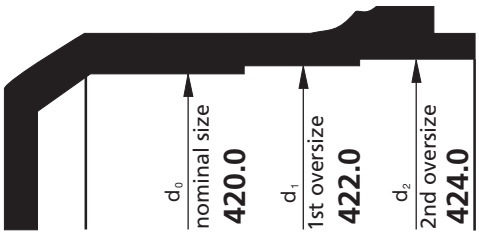
Brake anchor bracket ball:
SAF parts no. 4 387 0007 00
Copper paste

Never mix different types or grades of grease!

Hub nut tightening



After brake relining, lubricate camshaft bearings whilst rotating the camshaft through 360° several times.
Do not disassemble the hub bearing assembly.
Use a vacuum cleaner to remove brake dust.
Never use pressurised cleaning devices or cleaning fluids on the brake drum and hub.
Clean stub axle and apply fresh SAF fitting paste.



BRAKE type SNK 420

Brake drum diameter max. limit for remachining: 424.0 mm
Brake drum diameter max. limit of wear: 425.0 mm
Brake linings approved by SAF: BERAL 1541, BREMSKERL 6386
Machine new brake lining surface to brake drum diameter + 0.3 mm.
When relining brakes, fit cam-side and anchor-side lining following the instructions provided with the replacement kit.

Brake size	SAF parts no. brake lining / rivet kit	Brake drum / brake lining refacing stages in mm			Brake linings	Rivets	DIN 7338 rivet
		size	1st oversize	2nd oversize	number per axle		
SNK 420		d_0-420.0	d_1-422.0	d_2-424.0			
x 180	3 057 0060 00	20.6 20.0	21.6 21.0	22.6 22.0	4 4	64	B 8 x 15
x 200	3 057 0066 00	20.6 20.0	21.6 21.0	22.6 22.0	4 4		

Assembly tools	**SAF parts no.**
Hub nut spanner	2 012 0023 01
Hub puller	3 301 0010 00
Universal hub puller	4 434 3822 00
Wheel bearing and seal inserter	3 434 3308 00
Brake shoe clamping device	3 349 1001 00

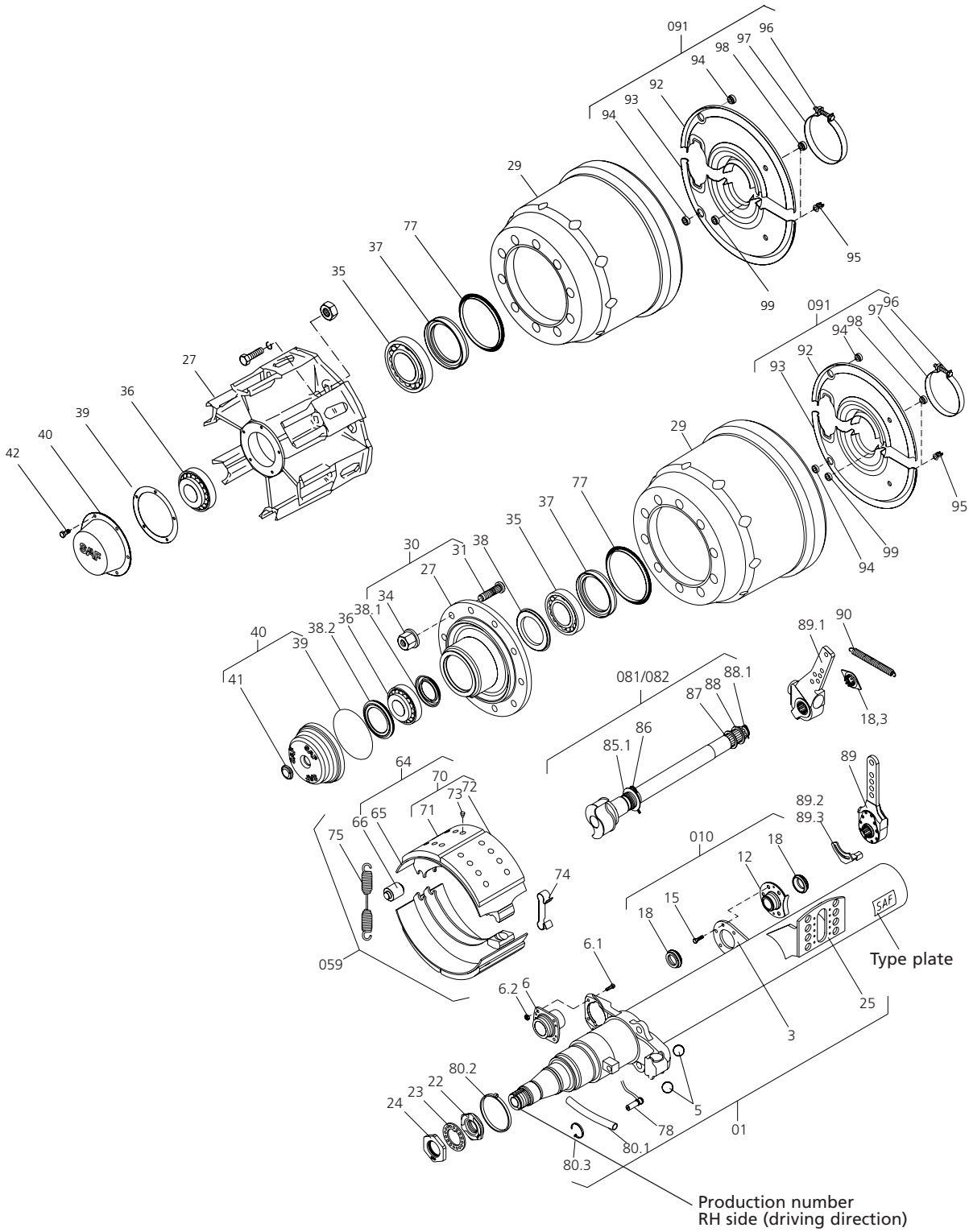
Exploded view of SAF Axles Types SK RS/RZ/RZT 12242

Torque wrench settings

Use a torque wrench.
The use of impact wrenches is not accepted.

Wheel nuts:
Spigot-hub-centred fixing:
M 22 x 1.5/600 Nm
Bolt-centred fixing:
M 22 x 2/430 Nm
M 22 x 1.5/430 Nm

TRILEX-Spoked wheels fixing:
Tyre 20"+24"
M 20/350 Nm



SK RS/RZ/RZT 12242

Item	Parts designation
01	**Axle beam assembly**
	including items 3-25
3	Mounting plate
5	Anchor ball
06	**Camshaft bearing kit**
	including items 6, 6.1, 6.2
6	Cam bearing unit
	Anchor bracket
6.1	Bolt
6.2	Lock nut
010	**Camshaft bearing kit**
	including items 11, 15, 18
11	Cam bearing unit
15	Bolt
18	Rubber dust cover
18.3	Lining wear indicator
22	Axle nut
23	Lock plate
24	Axle nut
25	Brake chamber support
27	**Hub assembly**
	including items 35-38.2
29	Brake drum
30	**Wheel bolt kit**
	including items 31-34
31	Wheel bolt
34	Wheel nut
35	Tapper roller bearing
36	Tapper roller bearing
37	Unitised seal
38	Seal plate, inner
38.1	Spacer plate
38.2	Seal plate, outer
39	O-ring
40	**Hub cap kit**
	including items 39-41
41	Protection plug
059	**Brake components**
64	**Brake shoe assembly with linings**
	including items 65, 71-73
65	**Brake shoe**
	including item 66
66	Cam roller
70	**Brake lining kit**
	including items 71-73
71	Brake lining, cam side
72	Brake lining, anchor side
73	Rivet
74	Retaining clamp
75	Release spring
77	ABV Exciter gear
78	Sensor
80.1	Cable hose
80.3	Clip
081	**Camshaft kit, LH**
	including items 85-88.1, 18.3
082	**Camshaft kit, RH**
	including items 85-88.1, 18.3
85	Disc spring
86	Retaining ring
87	Washer
88	Washer
88.1	Retaining ring
89	Slack adjuster
90	Release spring
	with automatic adjustment
89.1	Slack adjuster, automatic
89.2	Bracket, LH
89.3	Bracket, RH
091	**Dust cover kit**
	including items 92-99
92	Dust cover RH
93	Dust cover LH
94	Rubber plug
95	Cable clip
96	Fastener clip bolt
97	Clip
98	Rubber plug

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

for SAF Axles Types RZ/RZT/K RZ/K RZT/K ERZ/K ERZT/14242/16242

for suspensions refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Attention: Torque check wheel nuts after the first 50 km and 150 km (repeat also after every wheel removal).		●			
Torque check all nuts and bolts to recommended setting.		●		●	
Check and adjust hub end-float (if required).		●		●	
Pack hub bearings with fresh grease (also after every brake lining replacement, check hub bearing wear).					●
Lubricate camshaft bearing bushs.		●		●	
Lubricate suspension components, follow to individual suspension type maintenance instructions.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage Check brake linings for wear **Check camshafts for free rotation** Check slack adjusters for correct function Check air brake system for leaks (brake applied) Check leaf springs for damage, scoring and corrosion Check tyres for uneven wear and axles for correct tracking do readjustment if necessary		●	●		
Safety inspection					
Check brake lining to drum clearance for correct adjustment readjust clearance if necessary. Check service brake and parking brake for performance.		●	●		
Check truck-trailer combination for compatibiliy of service brake pessure. Check service brake pressure to manufacturer's specification. Adjust LSV output pressure, if found incorrect setting.		●			●
Check suspension ride height in laden condition if excessive trailer slope is obvious consult trailer manufacturer repeat check of trailer slope after every tractor interchanging.		●			

Special service conditions

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for SAF Axles Types RZ/RZT/K RZ/K RZT/K ERZ/K ERZT/14242/16242

Hub end-float setting

Tighten hub nut while at the same time turning the hub until slight resistance is felt.

Now slacken the hub nut by 1/12 of a turn until the next locking position is reached. Secure with split pin.

Insert hub puller and pull hub back to the outer bearing.

Hub cap thread with sealing compound and refit hub cap.

Check whether the hub rotates freely and without excessive end-float (repeat adjustment if necessary).

Lubricant specification:

Wheel bearings:
SAF parts no. 4 387 0011 05

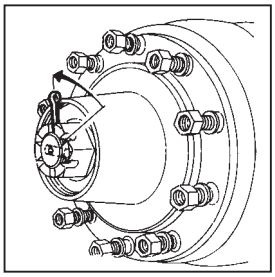
Camshaft:
SAF parts no. 4 387 0011 05

Stub axle:
SAF parts no. 4 387 0015 06
SAF fitting paste

Brake anchor bracket ball:
SAF parts no. 4 387 0007 00
Copper paste

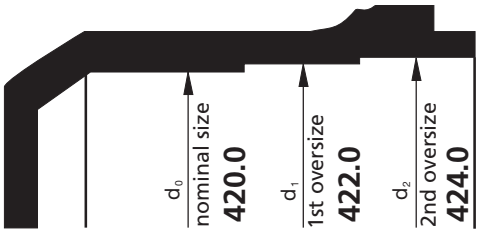
Never mix different types or grades of grease!

Hub nut tightening



After brake relining, lubricate camshaft bearings whilst rotating the camshaft through 360° several times.

Use a vacuum cleaner to remove brake dust. Never use pressurised cleaning devices or cleaning fluids on the brake drum and hub. Clean stub axle and apply fresh SAF fitting paste.



BRAKE type SNK 420

Brake drum diameter max. limit for remachining: 424.0 mm
Brake drum diameter max. limit of wear: 425.0 mm
Brake linings approved by SAF: BERAL 1541, BREMSKERL 6386
Machine new brake lining surface to brake drum diameter + 0.3 mm.
When relining brakes, fit cam-side and anchor-side lining following the instructions provided with the replacement kit.

Brake size	SAF parts no. brake lining / rivet kit	Brake drum / brake lining refacing stages in mm			Brake linings	Rivets	DIN 7338 rivet
		size	1st oversize	2nd oversize	number per axle		
SNK 420		d_0-420.0	d_1-422.0	d_2-424.0			
x 180	3 057 0060 00	20.6 20.0	21.6 21.0	22.6 22.0	4 4	64	B 8 x 15
x 200	3 057 0066 00	20.6 20.0	21.6 21.0	22.6 22.0	4 4		

Assembly tools	**SAF parts no.**	
Axle types	**14242**	**16242**
Hub nut spanner and cap spanner	1 012 0013 00 B	1 012 0013 00 B
Hub puller	3 301 0006 02	3 301 0007 01
Universal hub puller	4 434 3822 00	4 434 3822 00
Bearing inner race inserter	4 434 3815 00	4 434 3816 00
Wheel bearing and seal inserter	3 434 3300 00	3 434 3301 00
Brake shoe clamping device	3 349 1001 00	3 349 1001 00
Camshaft bushing tool	1 434 1056 00	1 434 1056 00
Camshaft bushing tool	1 434 1055 00	1 434 1055 00

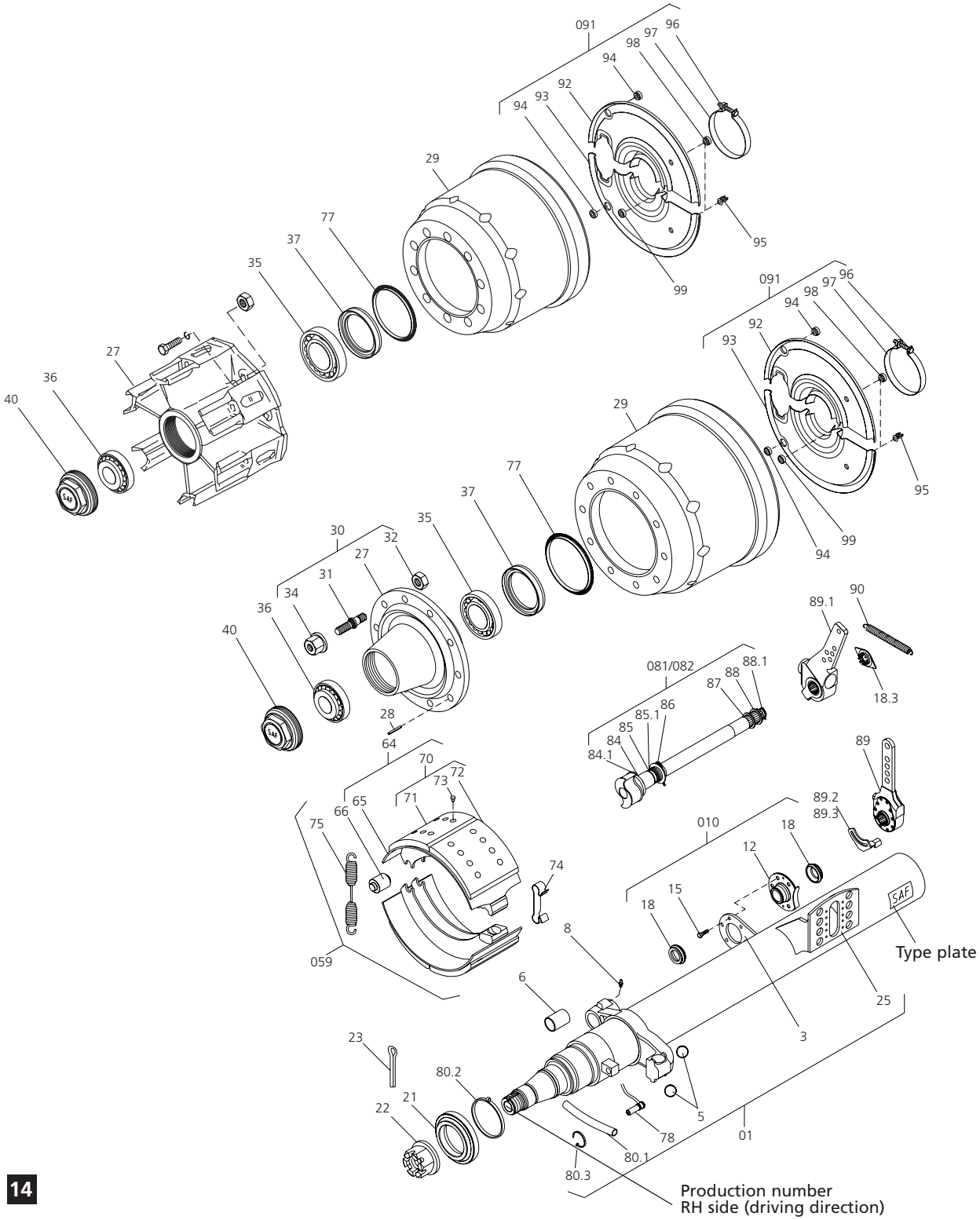
Exploded view of SAF Axles Types RZ/RZT/K RZ/K RZT/K ERZ/K ERZT/14242/16242

Torque wrench settings

Use a torque wrench.
The use of impact wrenches is not accepted.

Wheel nuts:
Spigot-hub-centred fixing:
M 22 x 1.5/600 Nm
Bolt-centred fixing:
M 22 x 2/430 Nm
M 22 x 1.5/430 Nm

TRILEX-Spoked wheels fixing:
Tyre 20"+24"
M 20/350 Nm



RZ/RZT/K RZ/K RZT/K ERZ/K ERZT/14242/16242

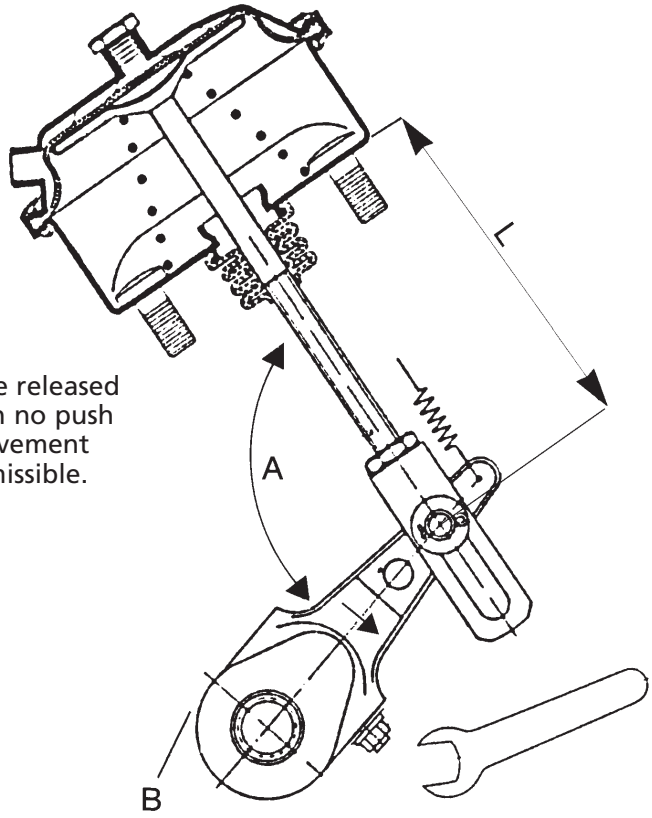
Item	Parts designation
01	**Axle beam assembly**
	including items 3-25
3	Mounting plate
5	Anchor ball
6	Bronze bush
8	Grease nipple
010	**Camshaft bearing kit**
	including items 11, 15, 18
11	Cam bearing unit
15	Bolt
18	Rubber dust cover
18.3	Wearing gauge
21	Wear ring
22	Axle nut
23	Split pin
25	Brake chamber support
27	Hub, including item 28
28	Grooved pin
29	Brake drum
30	**Wheel bolt kit**
	including items 31-34
31	Wheel bolt
32	Hex nut
34	Wheel nut
35	Tapper roller bearing
36	Tapper roller bearing
37	Grease seal
40	Hub cap
059	**Brake components**
64	**Brake shoe assembly with linings**
	including items 65, 71-73
65	**Brake shoe**
	including item 66
66	Cam roller
70	**Brake lining kit**
	including items 71-73
71	Brake lining, cam side
72	Brake lining, anchor side
73	Rivet
74	Retaining clamp
75	Release spring
77	Exciter gear
78	Sensor ABS
80.1	Cable hose
80.2	Clip
80.3	Clip
081	**Camshaft kit, LH**
	including items 84-88.1, 18.3
082	**Camshaft kit, RH**
	including items 84-88.1, 18.3
84	O-ring
84.1	Distance ring
85	Grease seal
85.1	Disc spring
86	Retaining clamp
87	Washer
88	Washer
88.1	Retaining clamp
89	Slack adjuster
	<u>with automatic ajustment</u>
89.1	Slack adjuster, automatic
89.2	Bracket, LH
89.3	Bracket, RH
90	Release spring
091	**Dust cover kit**
	including items 92-99
92	Dust cover RH
93	Dust cover LH
94	Rubber plug
95	Cable clip
96	Fastener clip bolt
97	Clip
98	Rubber plug

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Brake – checking and adjustment

S-cam brakes with manual slack adjusters

Due to normal brake drum and brake lining wear, the wheel brakes must be regularly adjusted in order to maintain the full brake performance. To ensure maximum brake efficiency, the clearance between brake lining and drum must be kept to an absolute minimum. To determine this clearance, check the brake chamber stroke while full pressure is applied to the service brake. If the push rod movement is more than 2/3 of the maximum chamber stroke then the brake must be adjusted. With a correctly adjusted brake, the push rod movement is not more than 15 mm.



In brake released position no push rod movement ist permissible.

Adjusting screw (spanner size 19 mm)

1

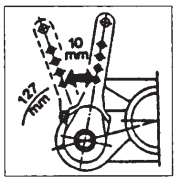
Turn adjusting screw to the right until...

2

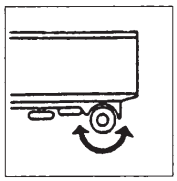
... the brake lining contacts closely to the brake drum.

3

Turn adjusting screw to the left, until...

4 

... the push rod movement (at 127 mm) is approx. 10 - 15 mm.

5 

The wheel must rotate freely with no grating noise.

Special instructions for automatic slack adjusters are given on the following pages.

A = At 1/2 push rod stroke, the angle must remain more than 90°.

B = On full brake application, the slack adjuster housing should have clearance to the axle beam.

L = Check push rod length in accordance with SAF specification.

Automatic slack adjuster Type HALDEX

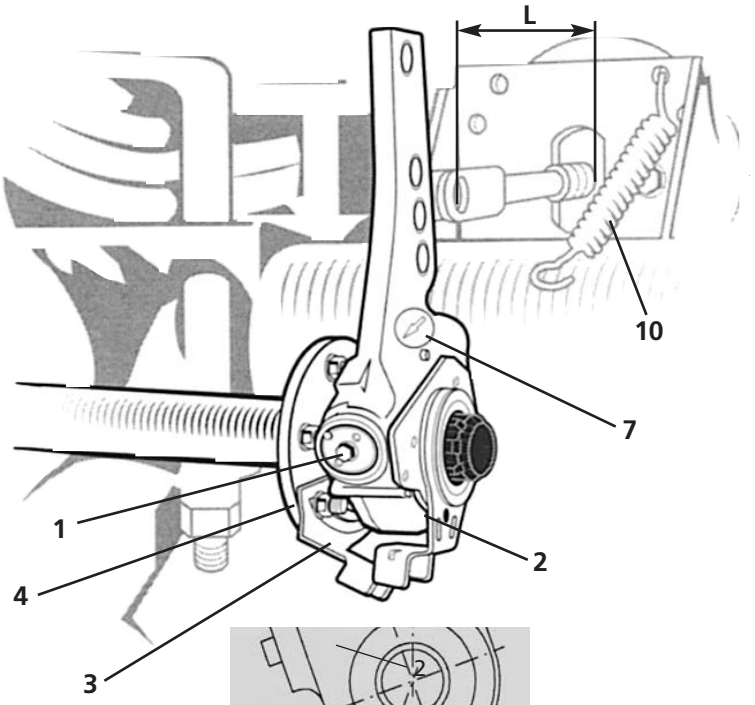
When interchanging from a manual to an automatic slack adjuster, make sure that you fitt replacement adjuster in accordance with type approval by SAF for your specific axle type.

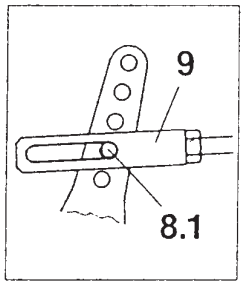
Changes to the adjuster arm length are not permissible.

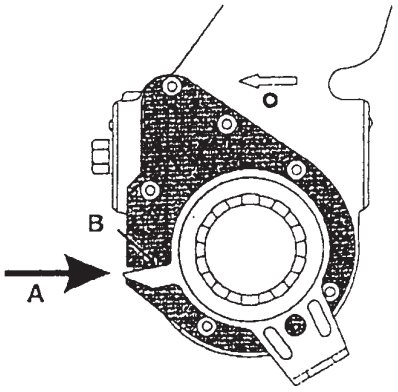
NOTE: The installation of an incorrect type of automatic slack adjuster will result in critical effect of serious overheating the brakes.

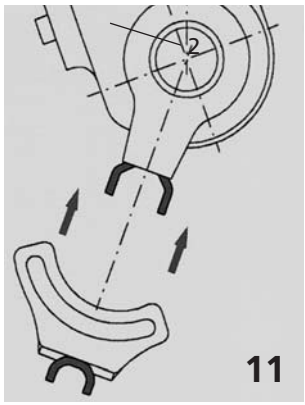
References regarding automatic slack adjuster to SAF axles types are available from your SAF service partner at request (see back cover).

Automatic slack adjuster – Type HALDEX









- Set cams and brake shoes to released position.
- Observe the correct push rod length "L" as indicated in the SAF specifications.
- **Membrane brake chamber**
  Before installing the automatic slack adjuster, ensure that the brake chamber push rod is in released position.
- By contrast, **spring brake chambers** must be under full operating pressure (min. 6 bar).

  IMPORTANT: If this is not maintained properly, the basic setting will be wrong, with critical effect of overheating the brakes.
- Grease the camshaft.
- Install anchor bracket (3), being sure to use two fixing bolts (4), do not yet tighten the bolts.
- Install the slack adjuster on the camshaft.
- The arrow (7) points in the braking direction.
- Turn adjusting screw (1) until the bore in the slack adjuster (8.1) coincides with the bore in the clevis end (9) (see drawing).
- Grease split pin (8) and secure.
- Install return spring (10).
- Move the control arm (2) in the direction of the arrow (operating direction of slack adjuster) up to its end position "A" **without** applying excessive force.
- When control arm (2) is in its end position "A", tighten the fixing bolts (4).
- For the anchor bracket mounting (11), ensure that the 2 U-profiles engage firmly together.
- Fit slack adjuster retaining clip on camshaft.
- Axial clearance: Adjust 0.5 - 2 mm using shims.
- Adjust running clearance between brake lining and drum by turning adjusting screw (1) in clockwise direction until the lining fits smoothly against the drum. Then back off adjusting screw (1) by 3/4 turn. **Do not use impact wrenches!**

FUNCTION CHECK

- If the self adjuster is functioning correctly, then a minimum torque of 18 Nm must be felt and a grating noise must be heard when adjusting screw (1) is backed off.
- Operate the footbrake several times. Check whether the brake drum rotates freely, check the lining clearance and repeat adjustment procedure if necessary.

Leaf-Spring Suspensions

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (GL)

for axles refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items		●		●	
Visual inspection for wear / damage					
Check suspension components for wear and damage		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals
e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

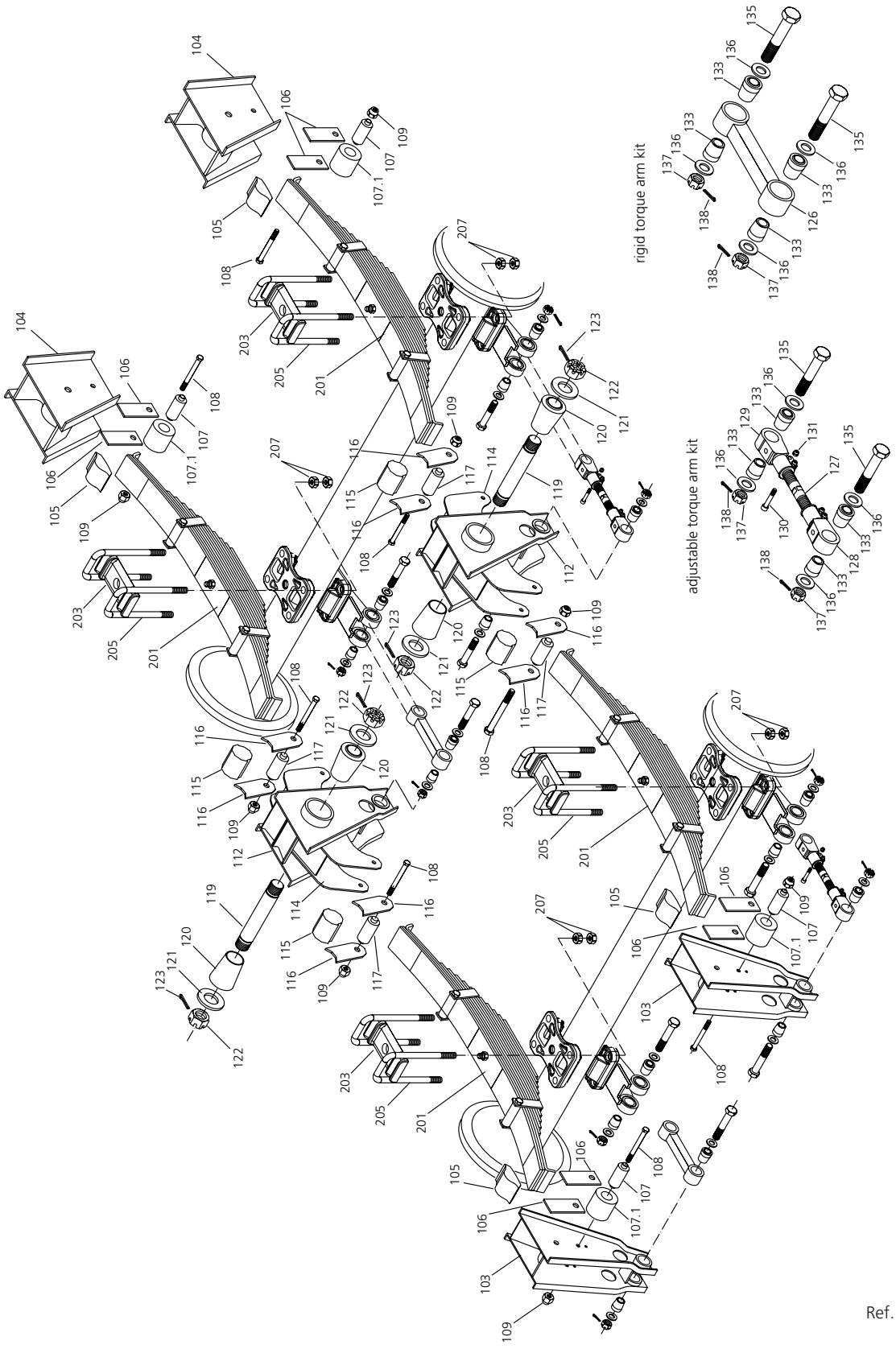
Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (GL)

Rubber bushing rocker shaft

Tri-axle suspension

Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_08_050-0

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (GL)

Item	Parts designation
101	**Hanger bracket kit, front** including items 103, 105-109
102	**Hanger bracket kit, rear** including items 104, 105-109
103	Front hanger bracket
104	Rear hanger bracket
105	Slider
106	Slide link
107	Distance sleeve
107.1	Rubber bush
108	Hex bolt
109	Lock nut
112	Hanger bracket
113	**Rocker arm kit** including items 108-109, 114-118
114	Rocker arm
115	Sliding block
116	Slide link
117	Distance sleeve
118	**Rocker shaft kit** including items 119-123
119	Rocker shaft
120	Rubber bush
121	Washer
122	Castle nut
123	Split pin
124	**Adjustable torque arm kit** including items 126, 133, 134
126	Torque arm rigid
127	Adjuster
128	**Torque arm end, LH-Threat** including items 130-131
129	**Torque arm end, RH-Threat** including items 130-131
130	Hex bolt
131	Lock nut
133	Rubber bush
134	**Bolt kit** including items 135-138
135	Hex bolt
136	Washer
137	Castle nut
138	Split pin
201	Spring
203	Clamping plate
205	U-bolt
206	Distance sleeve
207	Hex nut

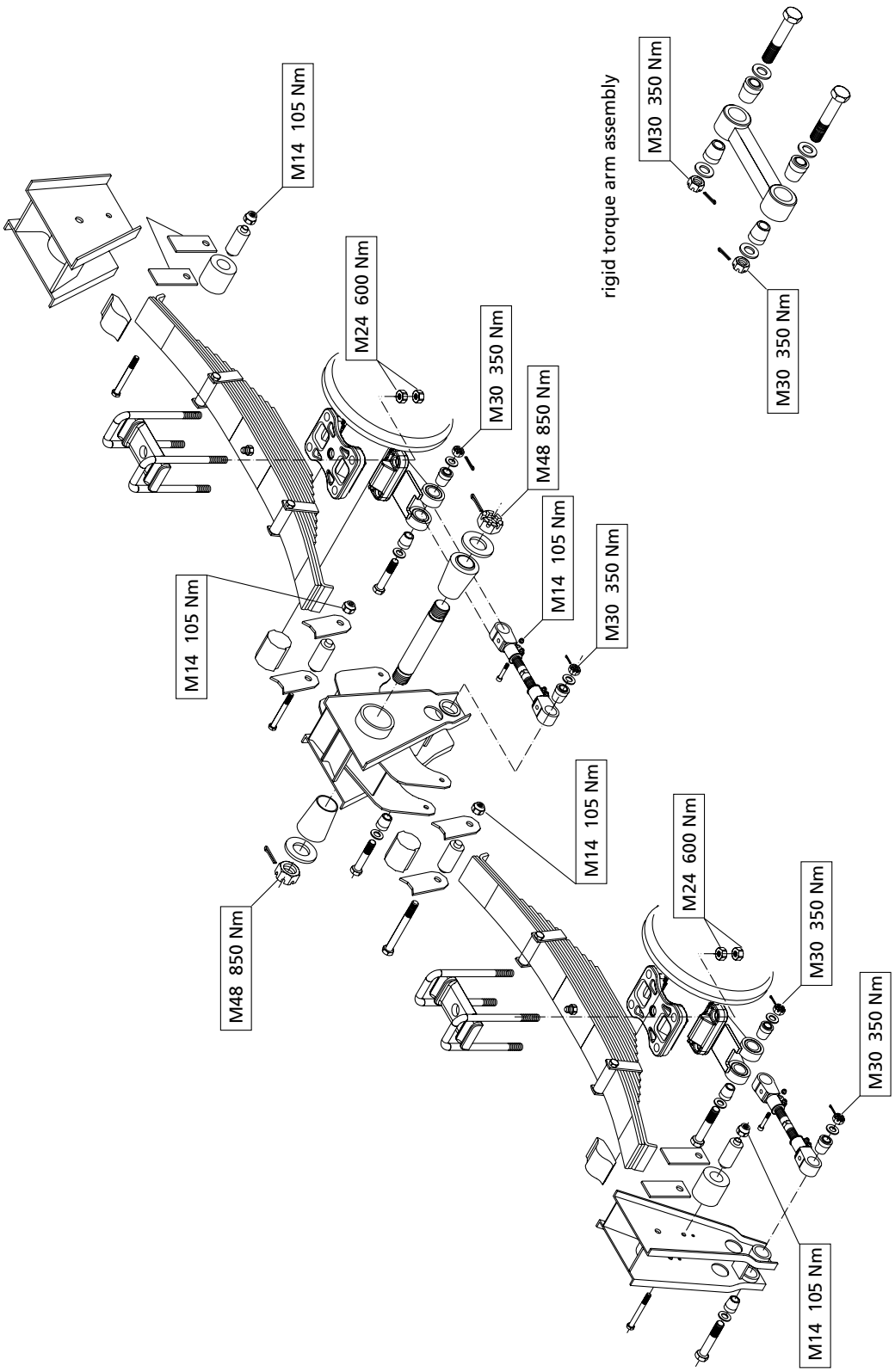
When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (GL)

Rubber bushing rocker shaft

Use a torque wrench. The use of impact wrenches is not accepted.

Tri-axle suspension
Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_25_050-0

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (ML)

for axles refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items.		●		●	
Lubricate rocker-arm shaft bushs.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage.		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals

e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

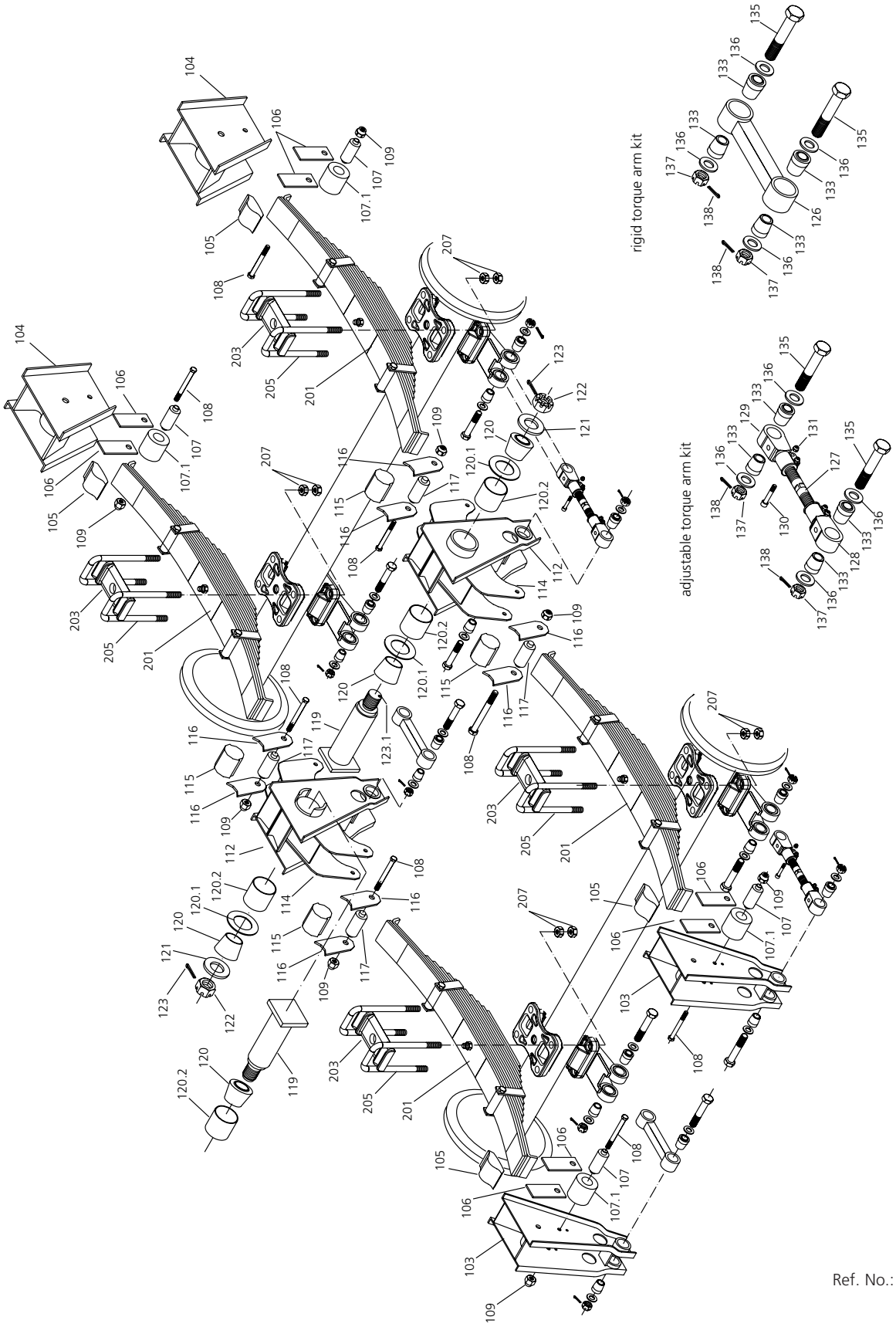
Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (ML)

Bronze bushing rocker shaft

Tri-axle suspension

Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_08_060-0

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (ML)

Item	Parts designation
101	**Hanger bracket kit, front** including items 103, 105-111
102	**Hanger bracket kit, rear** including items 104, 105-111
103	Front hanger bracket
104	Rear hanger bracket
105	Slide link
106	Slide link
107	Distance sleeve
108	Hex bolt
109	Lock nut
110	Hex bolt
111	Lock nut
112	Hanger bracket
113	**Rocker arm kit** including items 107-109, 114-118
114	Rocker arm
116	Slide link
117	Hex bolt
117.1	Washer
117.2	Lock nut
118	**Rocker shaft kit** including items 119-123.1
119	Rocker shaft
120	Rubber bush
120.1	Washer
120.2	Bronze bush
121	Washer
122	Castle nut
123	Split pin
123.1	Grease nipple

Item	Parts designation
125	**Torque arm adjustable kit** including items 127, 128-131, 133.1, 134
126	Torque arm rigid
127	Adjuster (210 mm)
128	**Torque arm end, LH-Threat** including items 128.1, 130-131
128.1	Grease nipple
129	**Torque arm end, RH-Threat** including items 128.1, 130-131
130	Hex bolt
131	Lock nut
133	Rubber bush
135	Bolt
136	Washer
137	Castle nut
138	Split pin
201	Leaf spring
203	Clamping plate
205	U-bolt
207	Hex nut

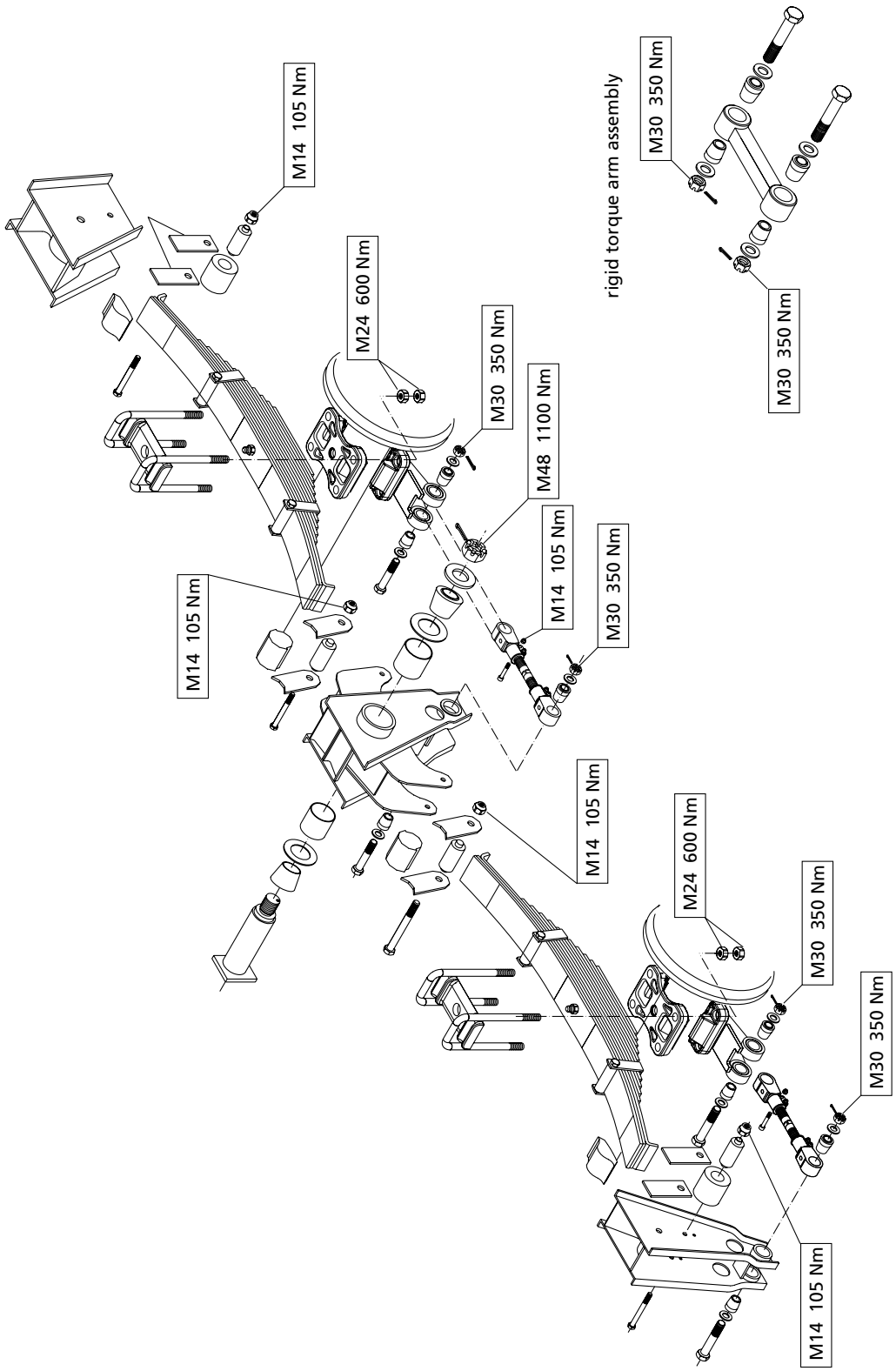
When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (ML)

Bronze bushing rocker shaft

Use a torque wrench. The use of impact wrenches is not accepted.

Tri-axle suspension
Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_25_060-0

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (HD)

for axles refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items.		●		●	
Lubricate rocker-arm shaft bushs.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage.		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals

e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

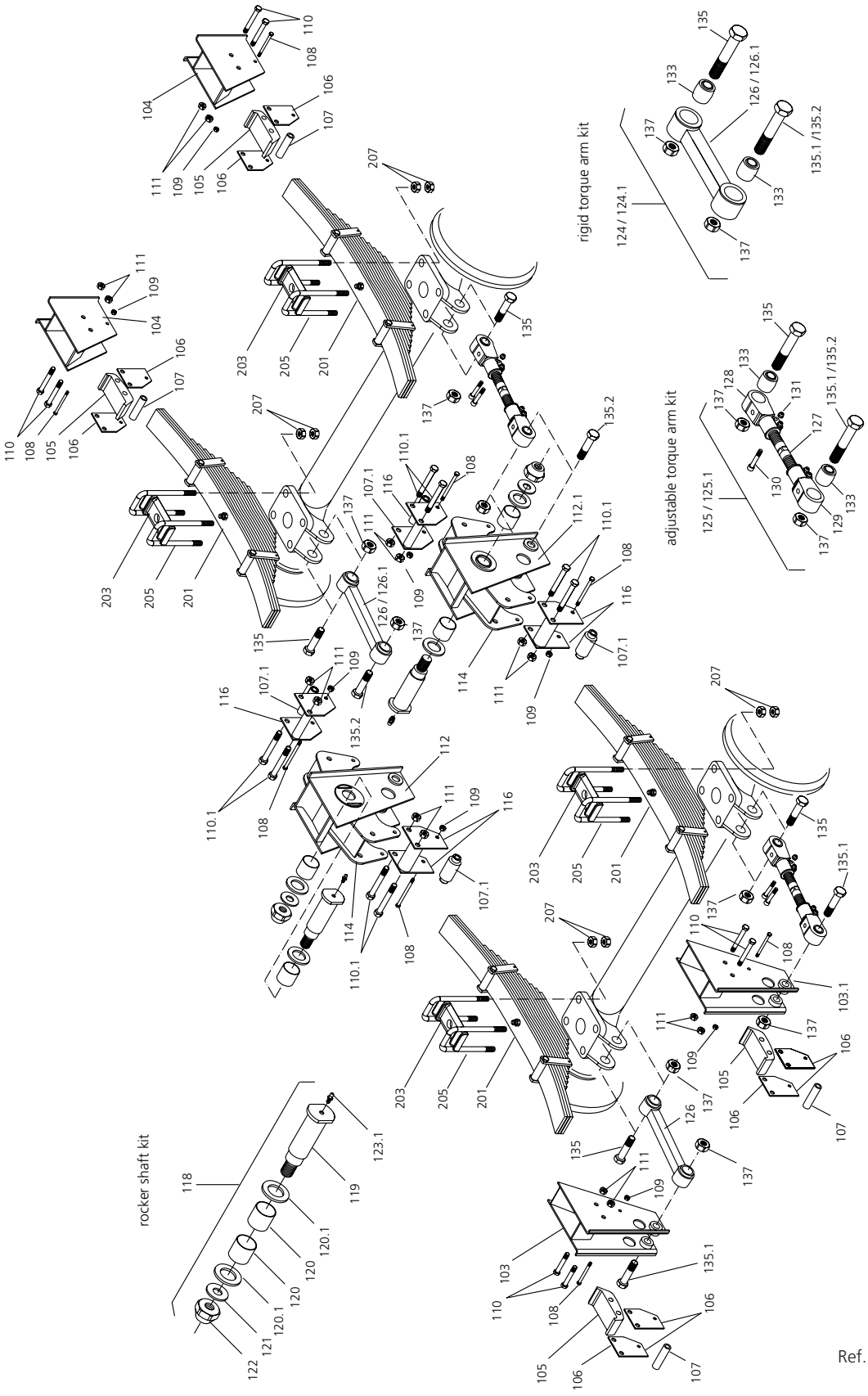
Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (HD)

Bronze bushing rocker shaft

Tri-axle suspension

Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_08_075_0

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (HD)

Item	Parts designation
101	**Hanger bracket kit, RH, front** including items 103, 105-111
101.1	**Hanger bracket kit, LH, front** including items 103.1, 105-111
102	**Hanger bracket kit, rear** including items 104, 105-111
103	Front hanger bracket, RH
103.1	Front hanger bracket, LH
104	Rear hanger bracket
105	Slider
106	Slide link
107	Distance sleeve
107.1	Distance sleeve
108	Hex bolt
109	Lock nut
110	Hex bolt
110.1	Hex bolt
111	Lock nut
112	Hanger bracket, RH
112.1	Hanger bracket, LH
114	Rocker arm
116	Slide link
118	**Rocker shaft kit** including items 119-123.1
119	Rocker shaft
120	Bronze bush
120.1	Washer
121	Washer
122	Lock nut
123.1	Grease nipple
124	**Torque arm rigid kit**
125	**Torque arm adjustable kit**
126	Torque arm
127	Adjuster
128	Torque arm end, LH-Threat
129	Torque arm end, RH-Threat
130	Hex bolt
131	Lock nut
133	Rubber bush
135	Hex bolt
135.1	Hex bolt
135.2	Hex bolt
137	Lock nut
201	Leaf spring
203	Clamping plate
205	U-bolt
207	Hex nut

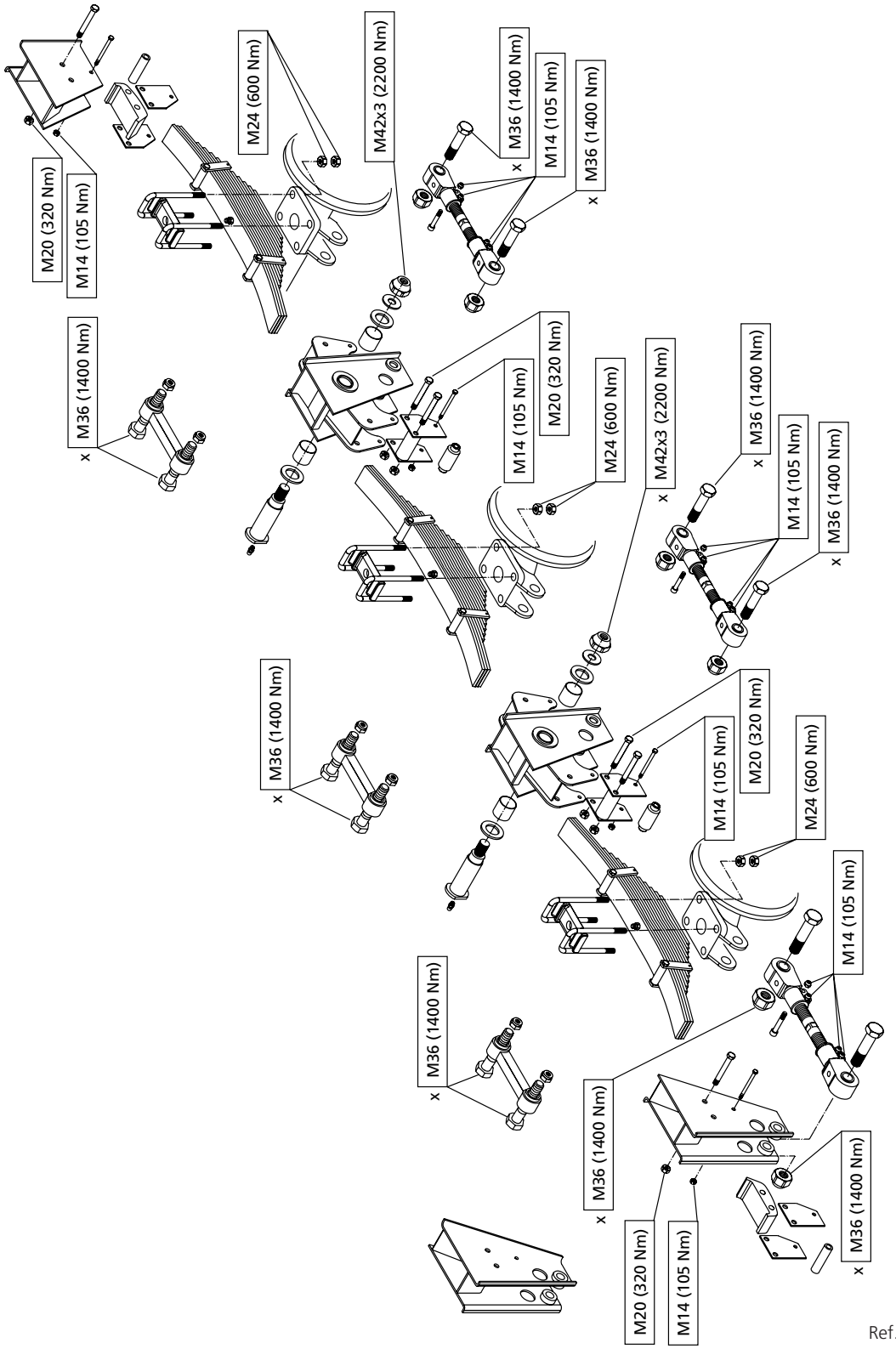
When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Leaf-Spring Suspensions Type VB 9,000 kg - 30,000 kg (HD)

Bronze bushing rocker shaft

Use a torque wrench. The use of impact wrenches is not accepted.

Tri-axle suspension
Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_25_002-0

Leaf-Spring Suspensions Type VB 12,000 kg - 48,000 kg

for axles refer to separate maintenance chart

Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items.		●		●	
Lubricate rocker-arm shaft bushs.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage.		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals
e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

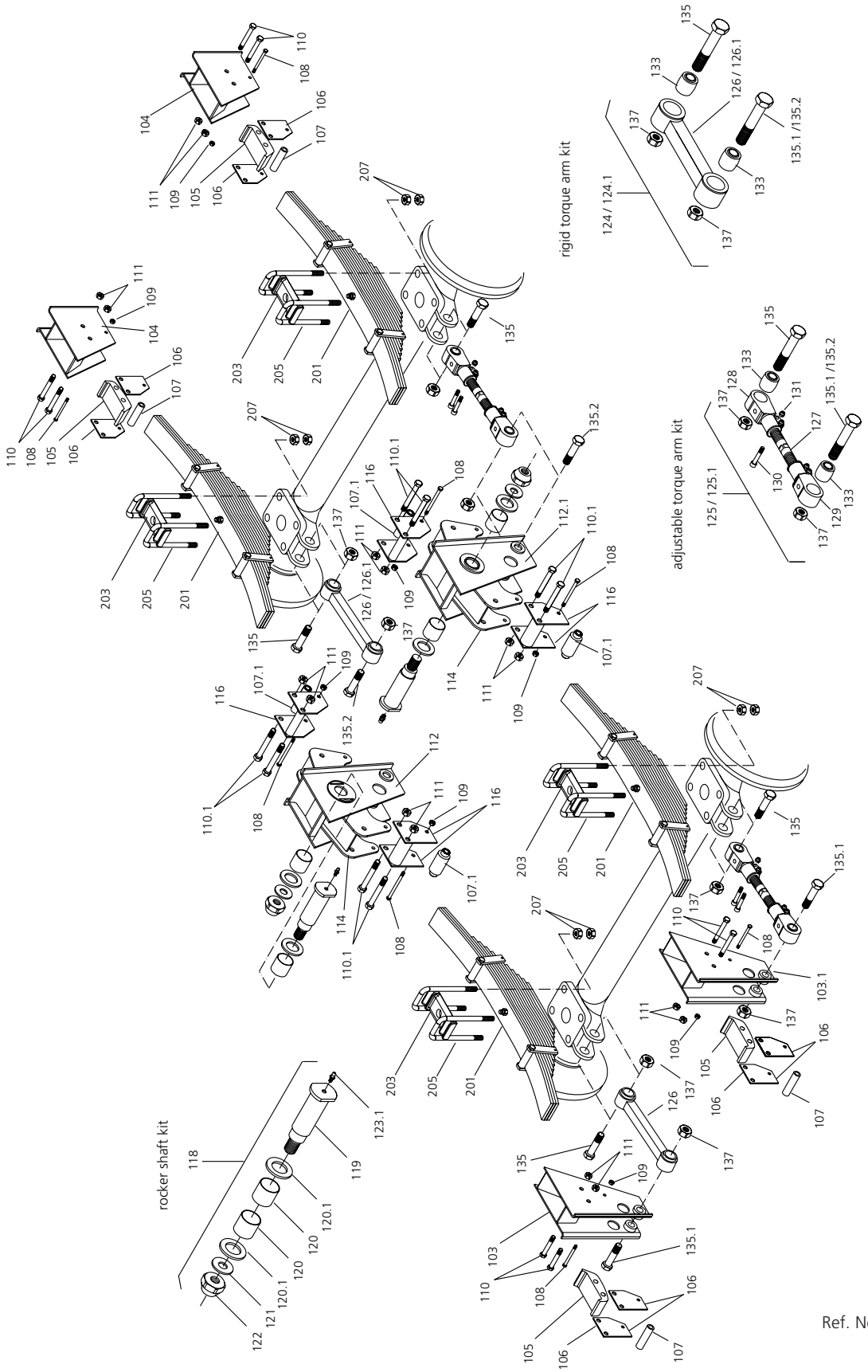
Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Leaf-Spring Suspensions Type VB 12,000 kg - 48,000 kg

Bronze bushing rocker shaft

Tri-axle suspension

Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_08_070_0

Leaf-Spring Suspensions Type VB 12,000 kg - 48,000 kg

Item	Parts designation
101	**Hanger bracket kit, RH, front** including items 103, 105-111
101.1	**Hanger bracket kit, LH, front** including items 103.1, 105-111
102	**Hanger bracket kit, rear** including items 104, 105-111
103	Front hanger bracket, RH
103.1	Front hanger bracket, LH
104	Rear hanger bracket
105	Slider
106	Slide link
107	Distance sleeve
107.1	Distance sleeve
108	Hex bolt
109	Lock nut
110	Hex bolt
110.1	Hex bolt
111	Lock nut
112	Front hanger bracket, RH
112.1	Front hanger bracket, LH
114	Rocker arm
116	Slide link
118	**Rocker shaft kit** including items 119-123.1
119	Rocker shaft
120	Bronze bush
120.1	Washer
121	Washer
122	Lock nut
123.1	Grease nipple
124	**Torque arm rigid kit**
125	**Torque arm adjustable kit**
126	Torque arm
127	Adjuster
128	Torque arm end, LH-Threat
129	Torque arm end, RH-Threat
130	Hex bolt
131	Lock nut
133	Rubber bush
135	Hex bolt
135.1	Hex bolt
135.2	Hex bolt
137	Lock nut
201	Leaf spring
203	Clamping plate
205	U-bolt
207	Hex nut

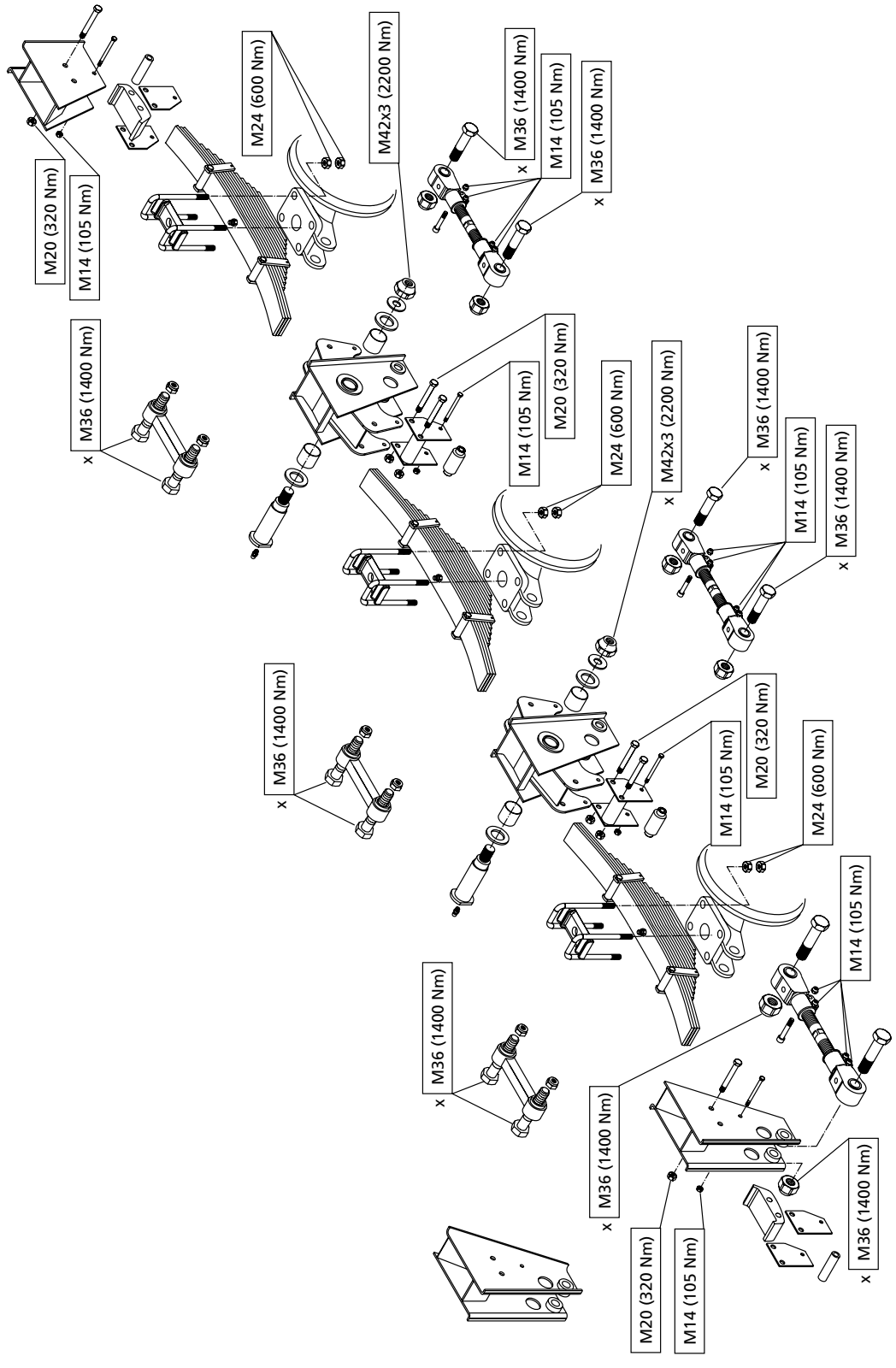
When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

Leaf-Spring Suspensions Type VB 12,000 kg - 48,000 kg

Bronzce bushing rocker shaft

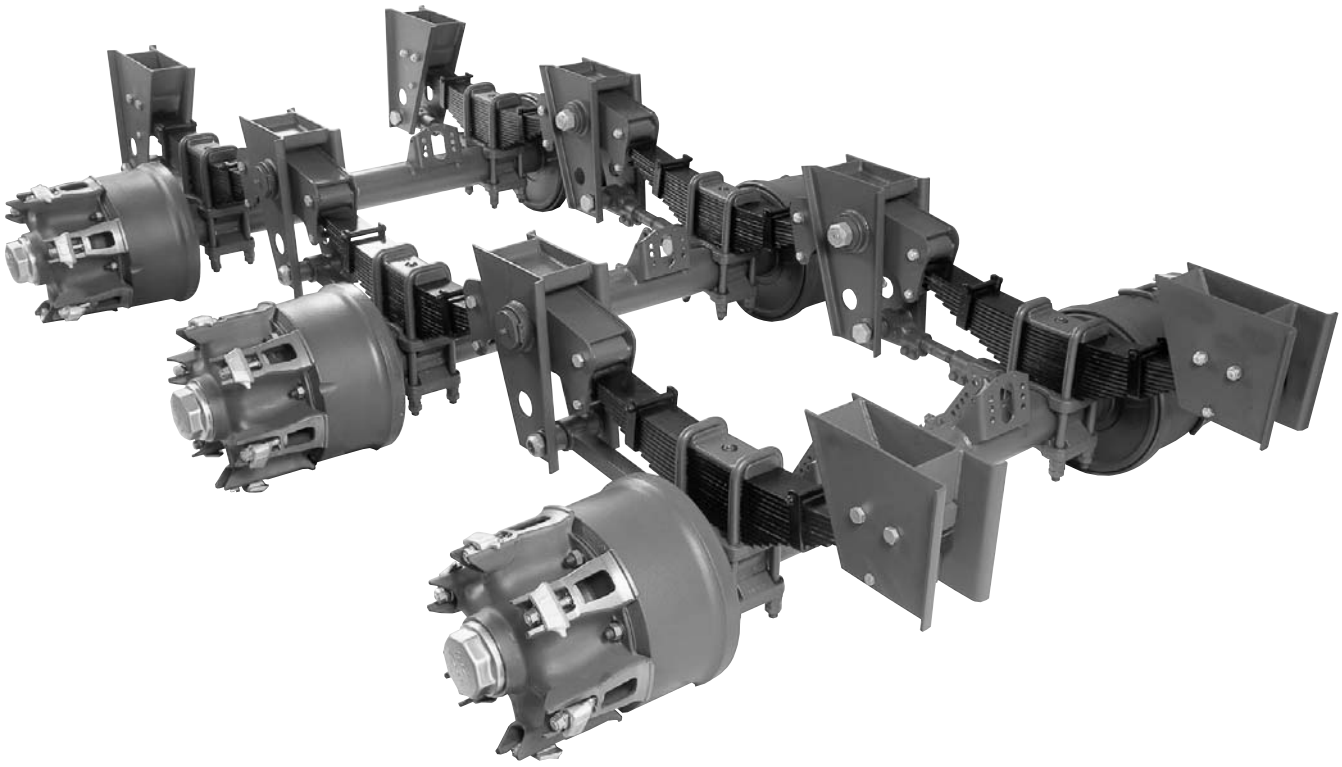
Use a torque wrench. The use of impact wrenches is not accepted.

Tri-axle suspension
Assembly of Tri-axle suspension are basically the same components as for the tandem suspension.
Repeat check maintenance instructions by similar procedure for the Tri-axle suspension components.



Ref. No.: IPL_25_001-0

Installation Instructions for Leaf-Spring Suspensions Type VB



– Leaf-Spring Suspensions Type VB are suspension assemblies which are balanced mechanically using rocker arm equalizers. They are equipped with parabolic springs or multiple leaf springs. Leaf-Spring Suspensions Type VB are used for both single-axle suspension and for Tandem-axle and Tri-axle suspension. In view of the mechanical equalization, it is essential that these Leaf-Spring Suspensions Type VB are installed horizontally, i.e. they must be installed in preloaded condition so that the arms are positioned horizontally. The axles of Leaf-Spring Suspensions Type VB are guided in longitudinal direction by radius rods and transversely to the body by the springs which are permanently attached to the axle and guided in equalizers or hanger brackets.

– The longitudinal guiding of the axles with the radius rods means that the axles are shifted in longitudinal direction during the equalizing movement. This necessitates a dimensionally precise installation, particularly of the middle axle.

– When the chassis is tilted backwards, the hanger brackets of the Leaf-Spring Suspensions Type VB must be positioned and welded on – observing the centre of gravity – in accordance with the dimensions shown in the Leaf-Spring Suspension Type VB drawing.

– With triple-axle Leaf-Spring Suspensions Type VB, the starting point for the Leaf-Spring Suspensions Type VB installation is the middle-axle. The specified distance between the middle hanger brackets (with equalizer arm) relative to one another must be exactly maintained (tolerances ± 2 mm). This distance corresponds to the wheelbase of the Leaf-Spring Suspensions Type VB.

– Starting from the middle hanger brackets, position and weld on the front and rear hanger brackets.

– The front and middle hanger brackets must be braced with adequately dimensioned cross-reinforcement gussets so that the transverse forces can be transmitted from the axle via the hanger brackets into the chassis.

– In order to be able to fit expedient cross-reinforcement gussets, these hanger brackets should have through-holes suitable for taking a tube with a diameter of 60.3 mm or 63.5 mm, depending on the Leaf-Spring Suspensions Type VB model. The wall thickness of this tube must be selected to suit the load, whereby a maximum of 10 mm is sufficient. These tubes must be welded to the hanger brackets. They must be braced diagonally to the body in order to transmit the lateral forces into the chassis. Tubes can again be used for this diagonal bracing; alternatively, gusset plates can be used.

– The rear hanger brackets must be braced to the chassis with gusset plates.

– The vehicle chassis must be designed in such a way that the forces transmitted from the Leaf-Spring Suspensions Type VB can also be passed into the longitudinal members and distributed.

– It is expedient to provide a cross member in the chassis above each hanger brackets. The cross member should be welded to the diagonal brace or the gusset plates.

– In case of narrow longitudinal members, intermediate plates should be welded between the hanger brackets and the lower flanges of the longitudinal members. On the outside, the upper and lower flanges of the longitudinal members should be joined with ribs or pockets to brevent relative movements.

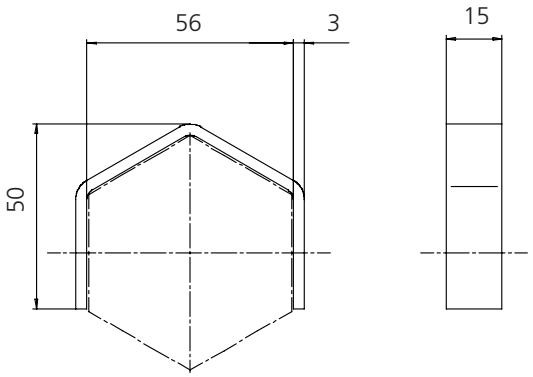
– In case of Leaf-Spring Suspensions Type VB subjected to particularly high loads, stops should be placed under the longitudinal members in the area of the equalizers to relieve the load on the welding seams of equalizers and hanger brackets. These should serve as limit stops for the equalizers during equalizing movements.

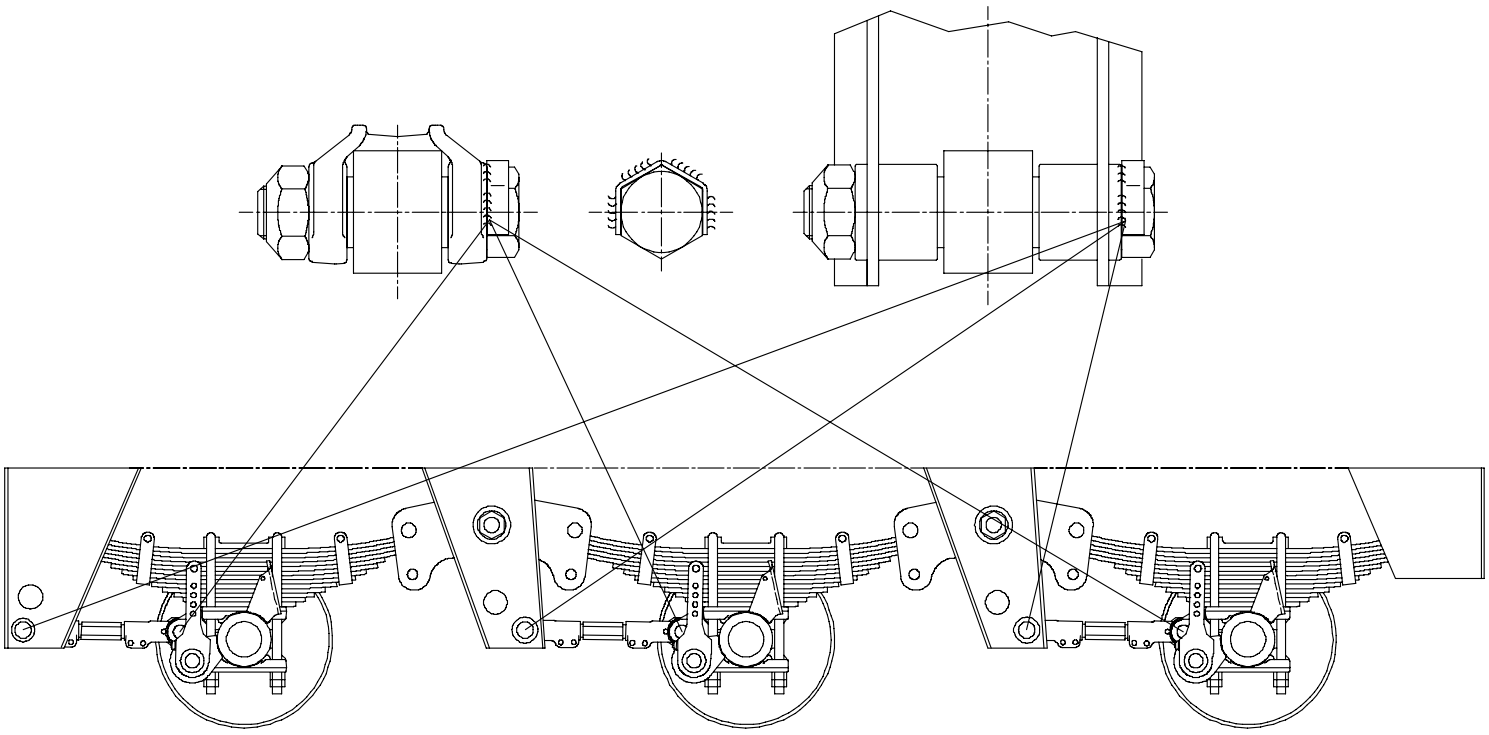
– All welding seams must be adequately dimensioned. Weld run end-craters are not accepted.

– For axle alignment, follow to axle alignment instructions.

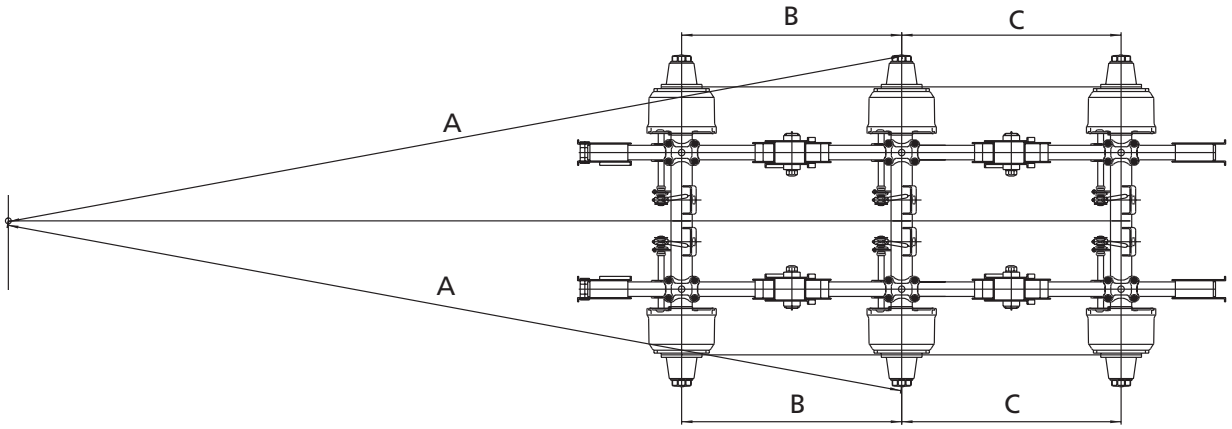
Important Information

Retaining mounts for torque arm clamping bolt of Leaf-Spring Suspension unit VB 12,000 - 48,000 kg, Ident-No.: 1 345 3002 00

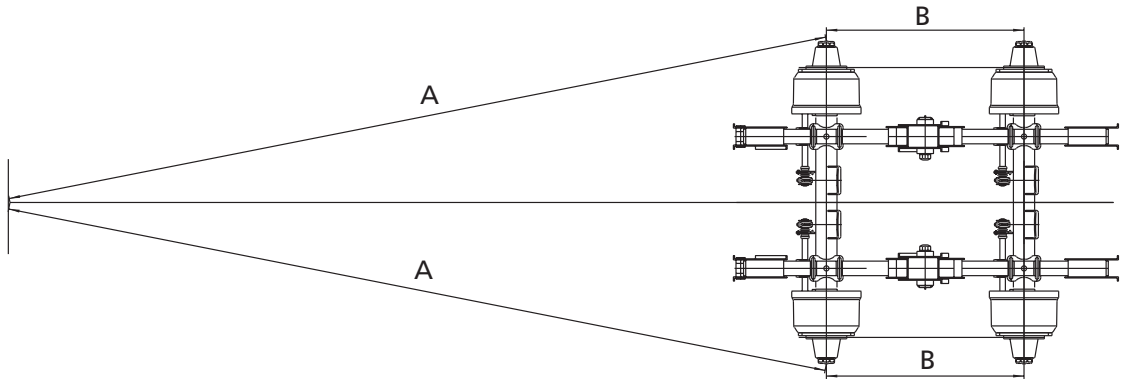




Axles alignment check and adjustment
Leaf-Spring Suspensions Types VB



Tri-axle semi-trailers
Distance A, B, C, max. permissible deviation 1.0 mm Axle alignment responsablety of vehicle manufacturer
Axle toe in/out ± 12' = ± 3.0 mm/m, Axle camber ± 12' (SAF manufacturing tolerance)
(values apply to unloaded vehicle)

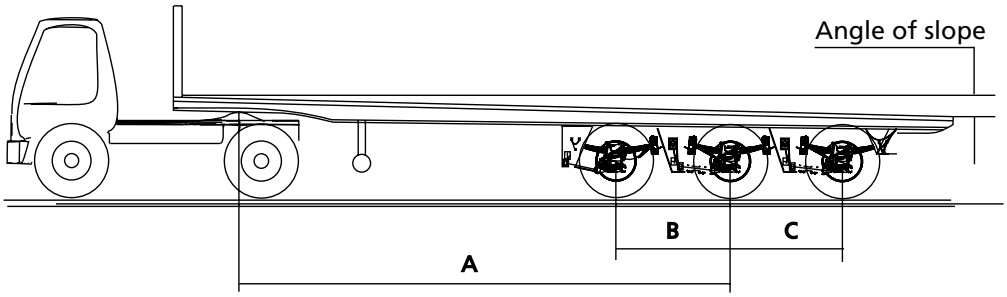


Tandem-axle semi-trailer
Distance A, B, C, max. permissible deviation 1.0 mm Axle alignment responsablety of vehicle manufacturer
Axle toe in/out ± 12' = ± 3.0 mm/m, Axle camber ± 12' (SAF manufacturing tolerance)
(values apply to unloaded vehicle)

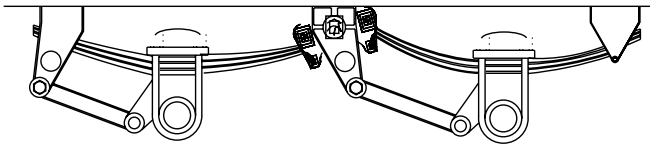
The max. permissible deviations for axle alignment are following to the tyre manufacturer's specifications.
To avoid excessive tyre wear we recommend having the alignment checked at regular intervals.
The relevant reference point for alignment check is the hub cap centre or stub axle centre.
Alignment deviations may be caused by:

- loose U-bolts
- spring seat wear
- deformation of axle assembly components due to excessive vehicle operation

Suspension installation, trailer slope

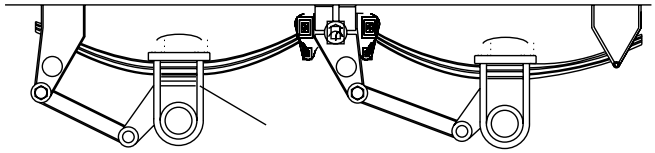


excessive rocker-arm tilt



not acceptable in the laden condition

corrected



higher spring seat package

Ref. No.: IPL_55_0500_0

All installations must be in accordance with the SAF instructions.

Trailer slope

Particular attention must be paid to the trailer platform slope in laden condition.

In the laden condition the rocker-arms should be always in the horizontal working level, to provide free articulation into the full front / rear equalizer working range.

When trailer operating with an excessive rocker-arm tilt, the suspension will not properly compensate various axle loads, especially not under uneven road conditions.

This excessive tilt will have limited equalizer mouvements causing the rocker-arms to strike the chassis fram with result of critical effect of exceeding the 2. and 3. axle capacities, and subsequent damage of the suspension components.

In this case corrections are required on the trailer suspension spring seats height or on the tractor laden fith-wheel height.

Therefore it is imperative to consult the trailer manufacturer, when in laden condition excessive trailer slope is obvious.

Repeat check trailer slope always after every tractor interchanging.

Tandem-Bogies

Tandem-Bogie Suspensions Type IRUDZ

for axles refer to separate maintenance chart

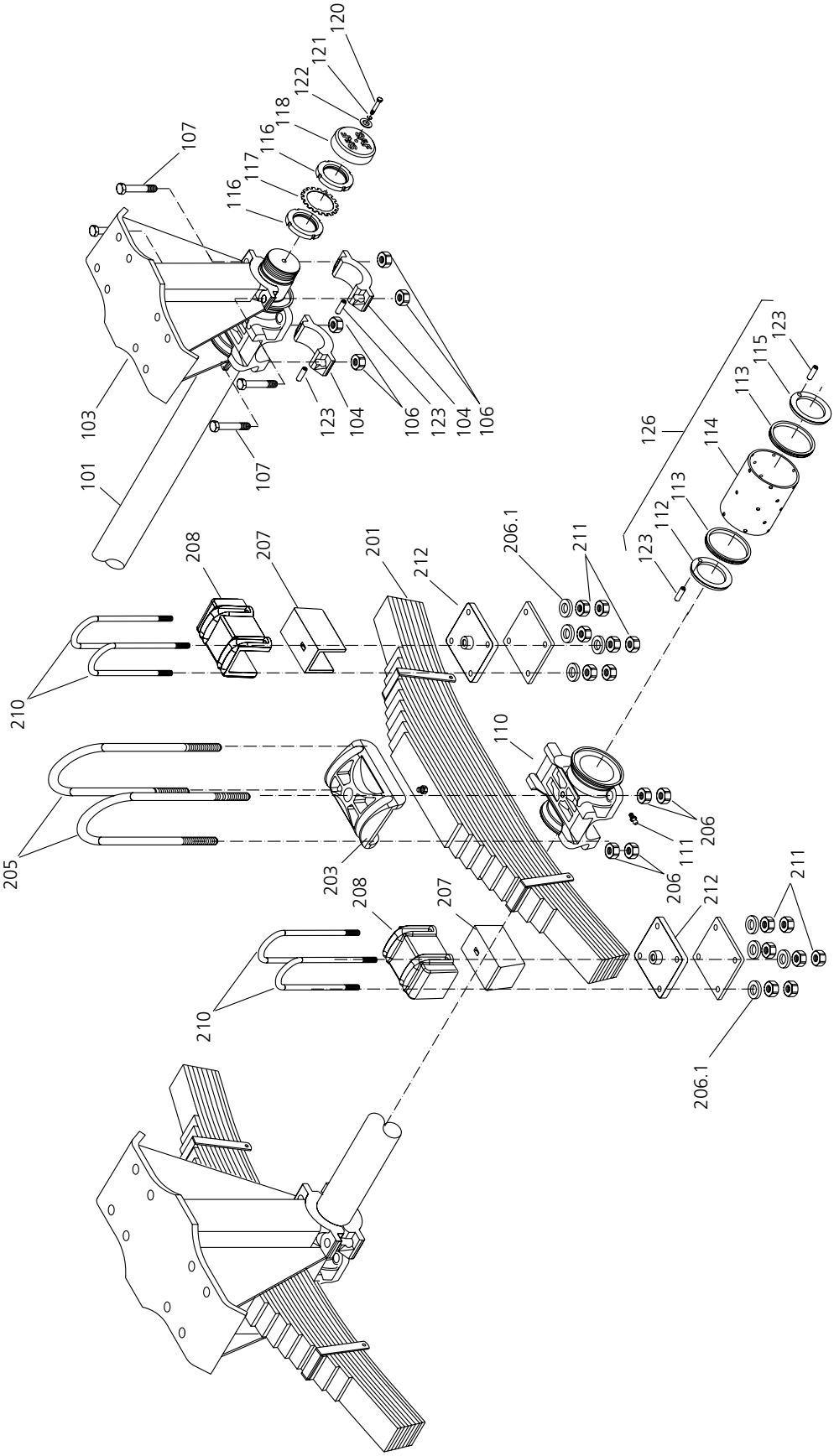
Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items.		●		●	
Lubricate walking beam pivot bushs.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage.		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals
e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Tandem-Bogie Suspensions Type IRUDZ 24,000 kg
Type IRUDZ 28,000 kg
Type IRUDZ 32,000 kg



Ref. No.: IPL_07_030_0

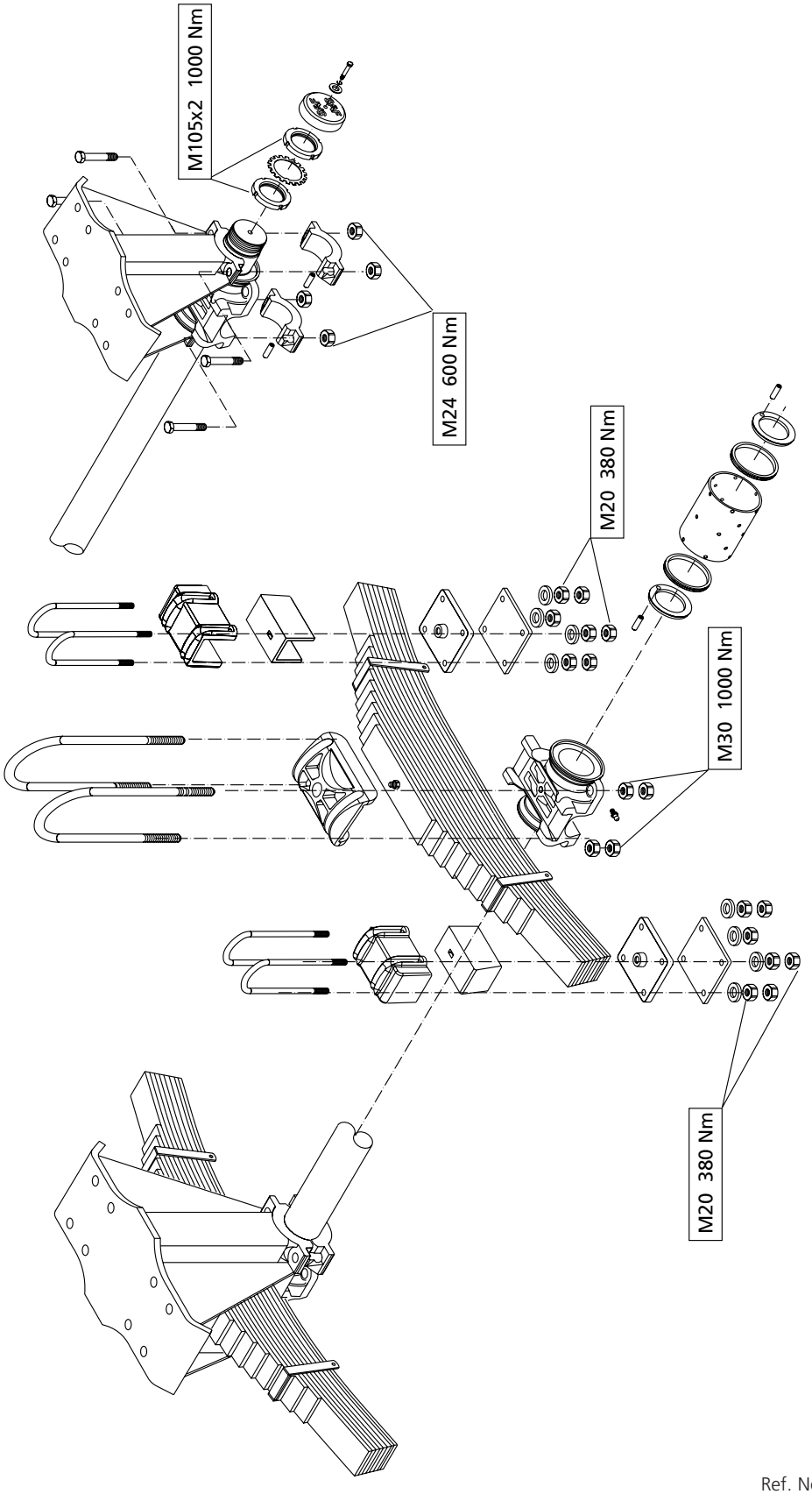
Tandem-Bogie Suspensions Type IRUDZ 24,000 kg
Type IRUDZ 28,000 kg
Type IRUDZ 32,000 kg

Item	Parts designation
01	**Trailer axle**
2	Spring seat
101	Walking beam
102	**Mounting pedestal kit**
	including items 103-105, 123
103	Pedestal
104	Bracket
105	**Bolt kit**
	including items 106-107
106	Hex bolt
107	Hex nut
110	Pivot housing
111	Grease nipple
112	Washer
113	Seal ring
114	Pivot bronze bush
115	Washer
116	Axle nut
117	Lock plate
118	Cap
120	Hex bolt
121	Spring washer
122	Washer
123	Sleeve
125	Cross member
126	**Repair kit**
	including items 112-115
201	Leaf spring
202	Main leaf
203	Spring tension plate
204	**U-bolt kit**
	including items 205-206
205	U-bolt
206	Hex nut
206.1	Washer
207	Rubber pad
208	Clamping box
209	**U-bolt kit M20**
	including items 210-211
210	U-bolt M20
211	Hex nut
212	Air bag offset

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

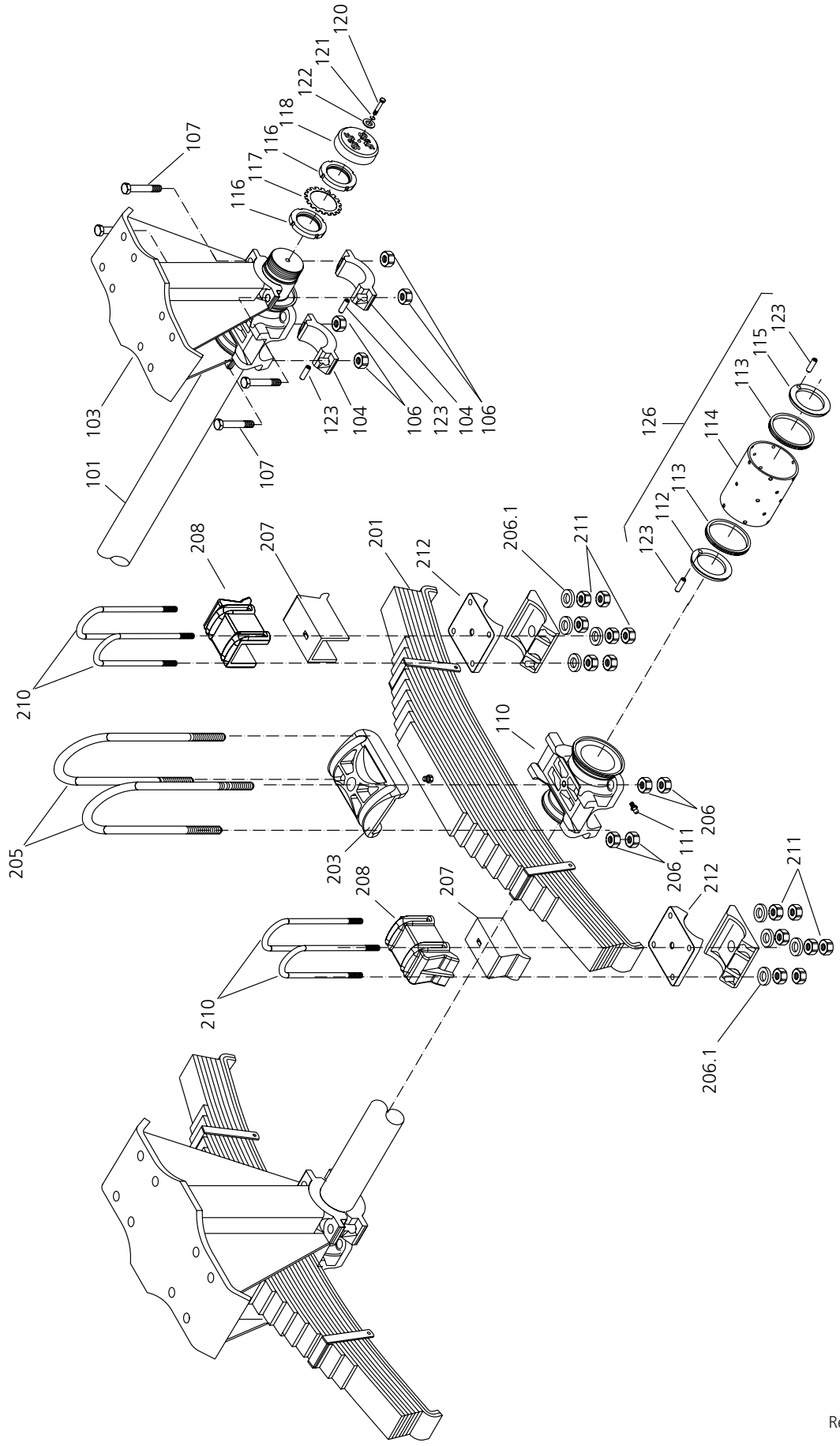
Tandem-Bogie Suspensions Type IRUDZ 24,000 kg
Type IRUDZ 28,000 kg
Type IRUDZ 32,000 kg

Use a torque wrench. The use of impact wrenches is not accepted.



Ref. No.: IPL_25_030-0

Tandem-Bogie Suspensions Type IRUDZW 32,000 kg



Ref. No.: IPL_07_031_0

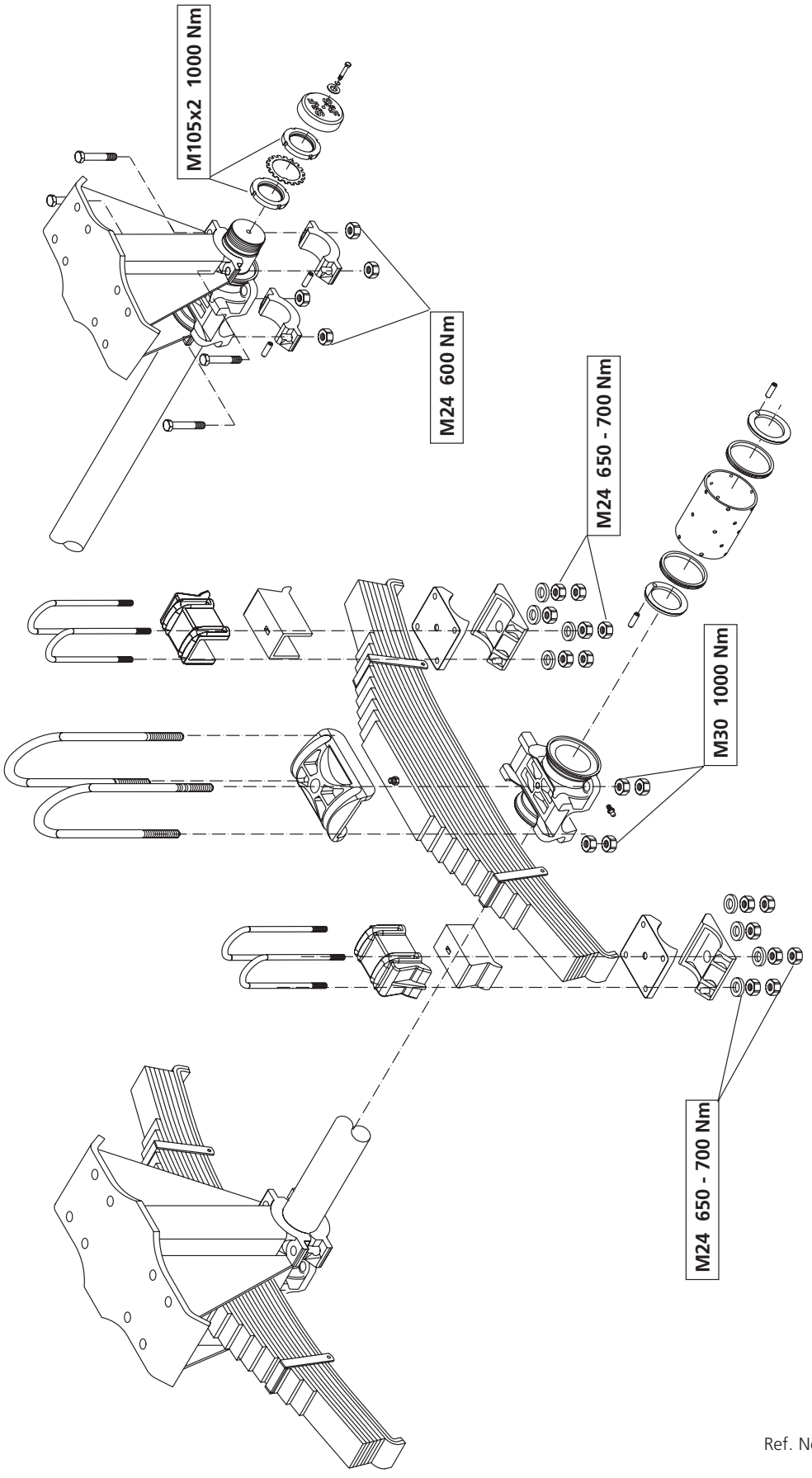
Tandem-Bogie Suspensions Type IRUDZW 32,000 kg

Item	Parts designation
01	**Trailer axle**
2	Spring seat
101	Walking beam
102	**Mounting pedestal kit** including items 103-105, 123
103	Pedestal
104	Bracket
105	**Bolt kit** including items 106-107
106	Hex bolt
107	Hex nut
110	Pivot housing
111	Grease nipple
112	Washer
113	Seal ring
114	Pivot bronze bush
115	Washer
116	Axle nut
117	Lock plate
118	Cap
120	Hex bolt
121	Spring washer
122	Washer
123	Sleeve
125	Cross member
126	**Repair kit** including items 112-115
201	Leaf spring
202	Main leaf
203	Spring tension plate
204	**U-bolt kit** including items 205-206
205	U-bolt
206	Hex nut
206.1	Washer
207	Rubber pad
208	Clamping box
209	**U-bolt kit M20** including items 210-211
210	U-bolt M20
211	Hex nut
212	Air bag offset

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

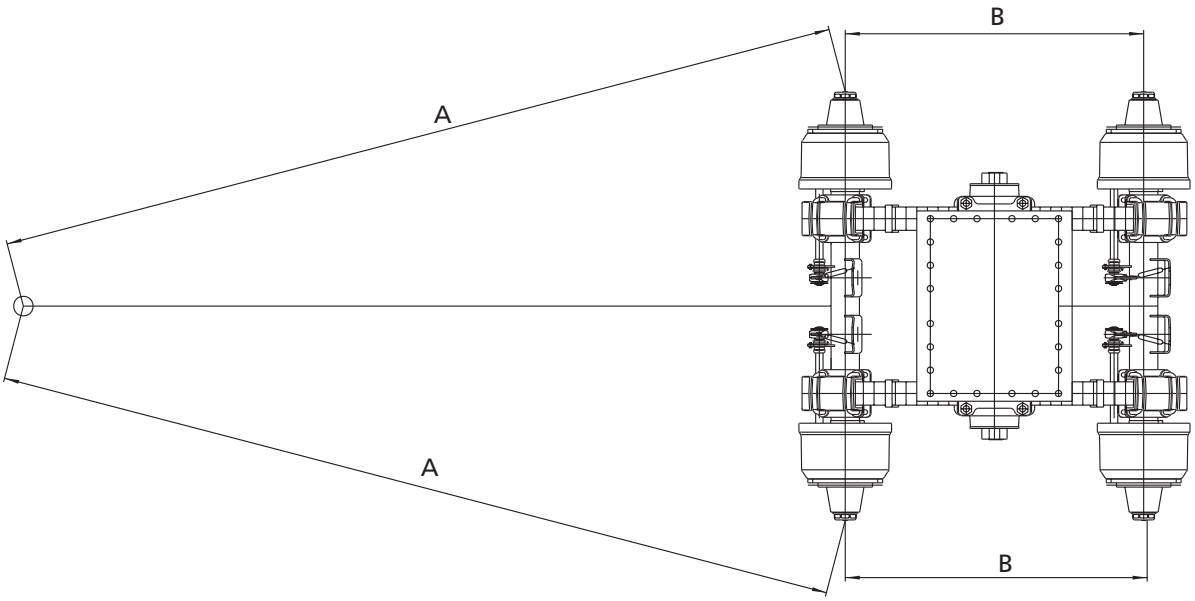
Tandem-Bogie Suspensions Type IRUDZW 32,000 kg

Use a torque wrench. The use of impact wrenches is not accepted.



Ref. No.: IPL_25_031-0

Axles alignment check and adjustment
Tandem-Bogie Suspensions Type IRUDZ / IRUDZW



Tandem semi-trailers
Distance A, B, C, max. permissible deviation 1.0 mm Axle alignment responsablety of vehicle manufacturer
Axle toe in/out ± 12' = ± 3.0 mm/m, Axle camber ± 12' (SAF manufacturing tolerance)
(values apply to unloaded vehicle)

The max. permissible deviations for axle alignment are following to the tyre manufacturer's specifications.
To avoid excessive tyre wear we recommend having the alignment checked at regular intervals.
The relevant reference point for alignment is the hub cap centre or stub axle centre.
Alignment deviations may be caused by:

- loose U-bolts
- spring seat wear
- deformation of axle assembly components due to excessive vehicle operation

Tandem-Bogie Suspensions Type IDZW

for axles refer to separate maintenance chart

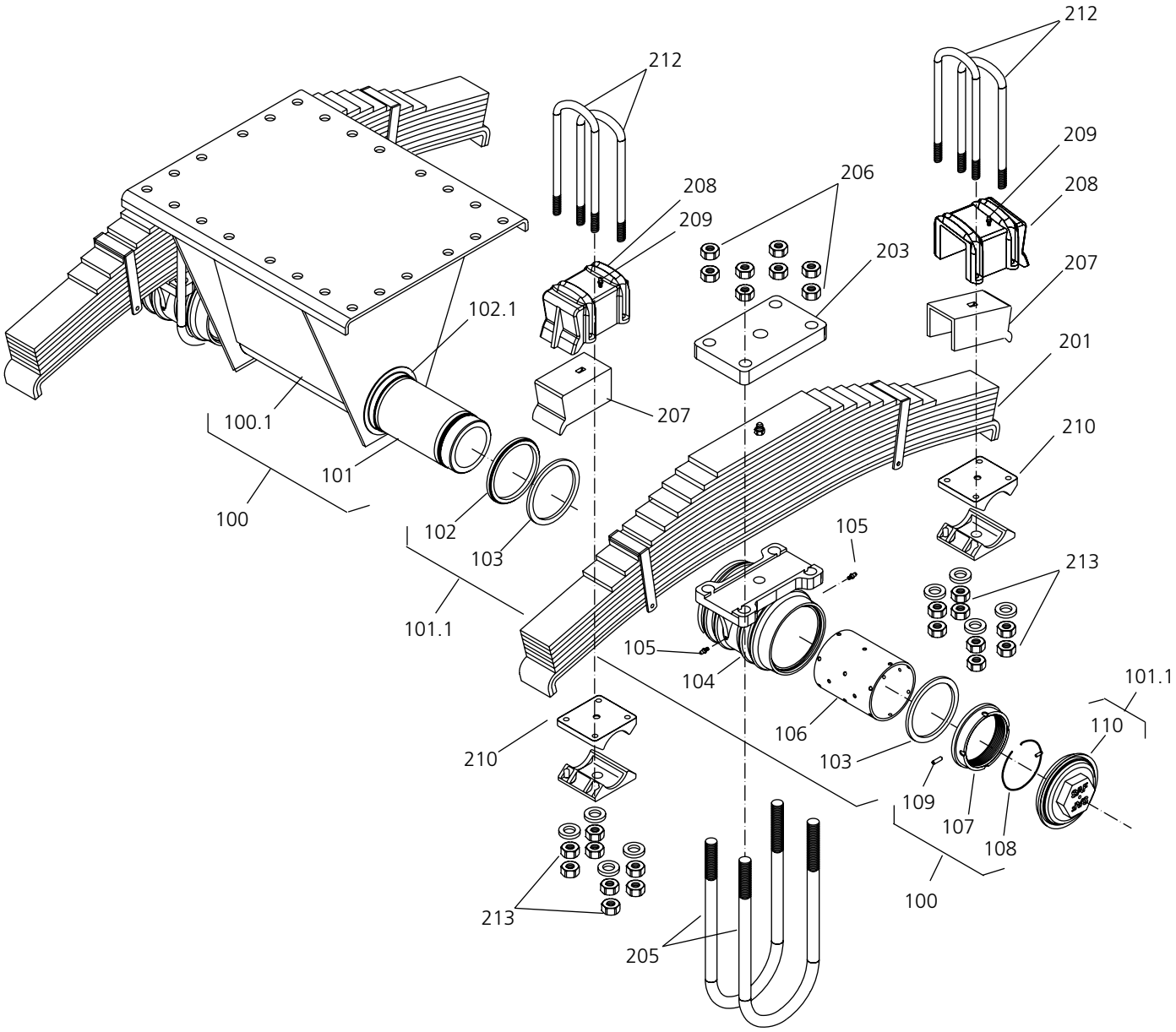
Service schedule		After first 5 000 km or	Periodic checks		
	Mileage intervals >		every 15 000 km	every 90 000 km	every 150 000 km
whichever comes first	Time intervals >	After first month	every month	every 6 months	every 12 months
Mechanical check					
Torque check all nuts and bolts to recommended setting. Follow exploded view items.		●		●	
Lubricate walking beam pivot bushs.		●	●		
Visual inspection for wear / damage					
Check suspension components for wear and damage.		●	●		
Safety inspection					
Check suspension ride height in laden condition if excessive trailer slope is obvious, consult trailer manufacturer. Repeat check also after every tractor interchanging.		●			

Special service conditions

Vehicles with long standing periods: service at specified time intervals
Vehicles used under extreme conditions: service at suitably reduced intervals
e.g.: Trailer operating in continous multi-shifts or in off-road constructions sites.

Warranty claims will only be accepted as long as the operating and maintenance instructions have been complied with and if SAF approved spare parts have been fitted.

Tandem-Bogie Suspensions Type IDZW 24,000 kg
Type IDZW 28,000 kg
Type IDZW 32,000 kg



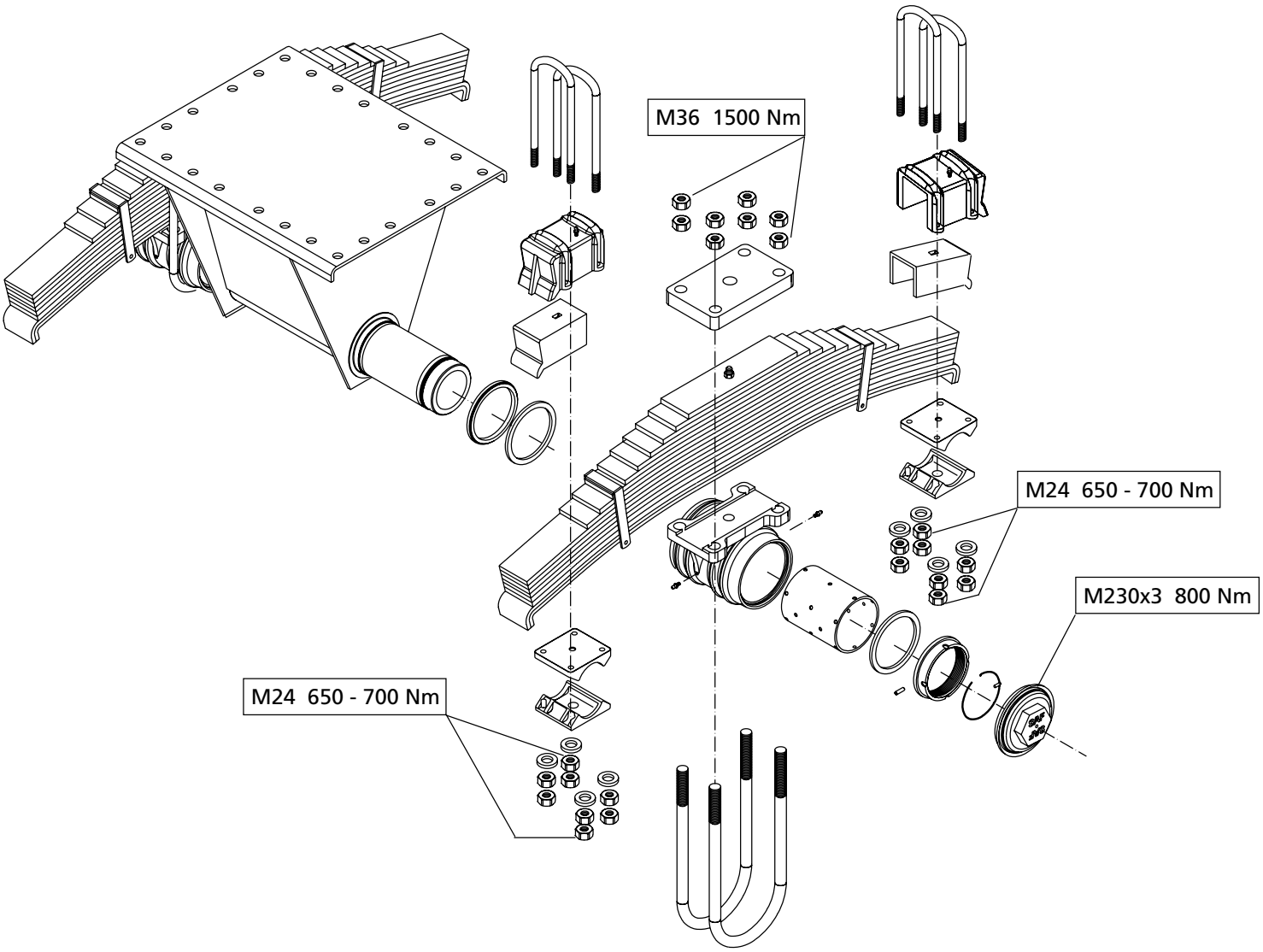
Tandem-Bogie Suspensions Type IDZW

Item	Parts designation
01	**Trailer axle**
2	Spring seat
100	**Mounting pedestal/beam kit**
100.1	Pedestal
101	Walking beam
102	Seal ring
103	Thrust washer
104	Pivot housing
105	Grease nipple
106	Pivot bronze bush
107	Axle nut
108	Looking ring
109	Bolt
110	Cap
201	Leaf spring
203	Clamping plate
205	U-bolt
206	Hex nut
207	Rubber pad
208	Clamping box
209	Grease nipple
210	Slider
212	U-bolt
213	Hex nut

When ordering spare parts quote correct axle identification serial no., refer to the axle type plate.

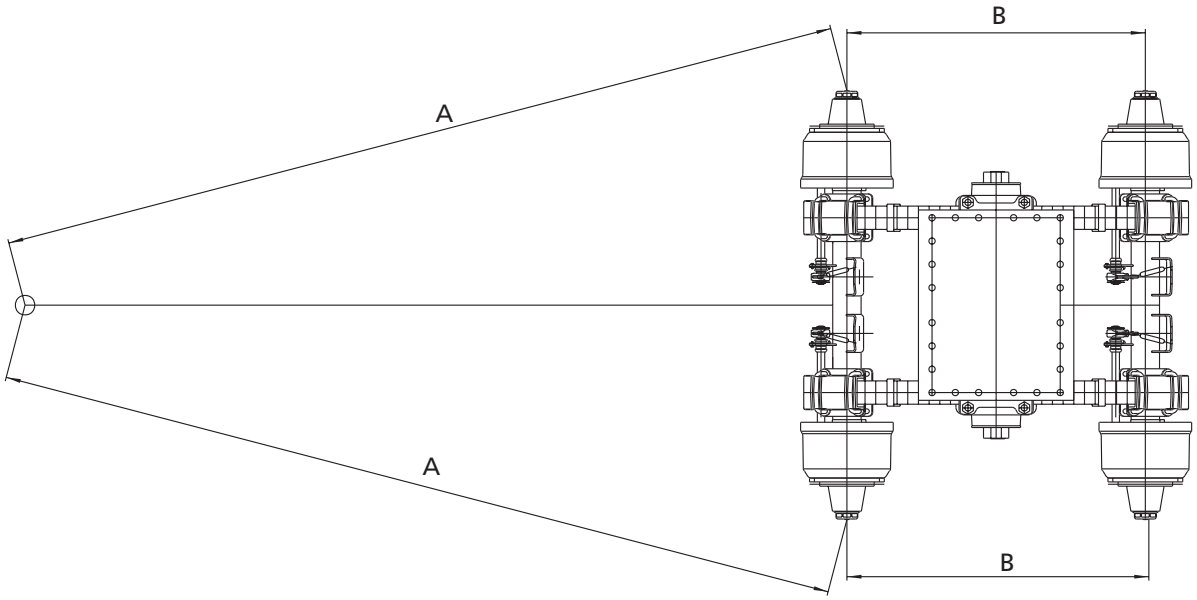
Tandem-Bogie Suspensions Type IDZW 24,000 kg
Type IDZW 28,000 kg
Type IDZW 32,000 kg

Use a torque wrench. The use of impact wrenches is not accepted.



Ref. No.: IPL_25_020-0

Axles alignment check and adjustment Tandem-Bogie Suspensions Type IDZW



Tandem semi-trailers
Distance A, B, C, max. permissible deviation 1.0 mm Axle alignment responsablety of vehicle manufacturer
Axle toe in/out ± 12' = ± 3.0 mm/m, Axle camber ± 12' (SAF manufacturing tolerance)
(values apply to unloaded vehicle)

The max. permissible deviations for axle alignment are following to the tyre manufacturer's specifications.
To avoid excessive tyre wear we recommend having the alignment checked at regular intervals.
The relevant reference point for alignment is the hub cap centre or stub axle centre.
Alignment deviations may be caused by:

- loose U-bolts
- spring seat wear
- deformation of axle assembly components due to excessive vehicle operation

The following tightening torques are only valid if no other values are given in the axle maintenance chart.

Torque wrenches settings, impact wrench not permissible.

Thread	W.A.F.	Material 8,8	10,9	12,9
M 8	W.A.F. 13	25	35	41
M 8 x 1		27	38	45
M 10	W.A.F. 17 / 16	49	69	83
M 10 x 1		52	73	88
M 12	W.A.F. 19 / 18	86	120	145
M 12 x 15		90	125	150
M 14	W.A.F. 22 / 21	135	190	230
M 14 x 1.5		150	210	250
M 16	W.A.F. 24	210	300	355
M 16 x 1.5		225	315	380
M 18	W.A.F. 27	300	405	485
M 18 x 1.5		325	460	550
M 20	W.A.F. 30	410	580	690
M 20 x 1.5		460	640	770
M 22	W.A.F. 32	550	780	930
M 22 x 1.5		610	860	1050
M 24	W.A.F. 36	710	1000	1200
M 24 x 2		780	1100	1300
M 27	W.A.F. 41	1050	1500	1800
M 27 x 2		1150	1600	1950
M 30	W.A.F. 46	1450	2000	2400
M 30 x 2		1600	2250	2700
M 36 x 2	W.A.F. 55	2450	3450	4150

SAF
Vertretungen / Agents / Concessionnaires
Service-Stationen / Service Stations / Points Service

Australia	HDTE-Heavy Duty Transport Equipment Pty. Ltd.	(0061) 3 - 93690856
Austria	SAF Hering-Rad Ges.m.b.H.	(0043) 2236 - 646500
Belarus	SAF Representative Office	(00375) 17 - 2849092
Bulgaria	SAF Trade Bulgarien OOD	(00359) 58 - 22491
Chile	Union Tecnica Automotriz S.A.C.	(0056) 2 - 623 48 51
Czech Republic	SAF Trade, spol. s.r.o.	(00420) 632 - 557188
Denmark	Transport-Komponenter A/S	(0045) 75520080
Egypt	Egyptian Co. for Trading & Construction	(0020) 2 - 2152309
Finland	Oy Arne Stara AB	(00358) 67818750
France	SAF France S.A.	(0033) 1 - 30880900
Germany	Otto Sauer Achsenfabrik Keilberg KG	(0049) 06095 - 301 - 0
Great Britain	I.M.S. Ltd.	(0044) 1509 - 600185
Hungary	L.V. Technik Kft.	(0036) 76 - 493507
Iceland	Stilling	(00354) 5 - 889797
Israel	M.N. Systems Ltd.	(00972) 9 - 8626030
Italy	SAF Italia s.r.l.	(0039) 045 - 8781435
Malaysia	Quality Trailer Components	(0060) 3 - 61858292
Netherland	SAF Benelux B.V.	(0031) (0) 342 - 497889
New Zealand	Transpecs Ltd.	(0064) 9 - 9807300
Norway	MoRek a.s.	(0047) 67063500
Peoples Republic of China	Jinan SAF Axle Co. Ltd.	(0086) 531 - 8 87336 1-889
Poland	SAF POLSKA Sp.z.o.o.	(0048) 672 16 65 60/70
Portugal	Suspartes Lda.	(00351) 21 - 2134710
Romania	S.C. SAF TRADE RO S.R.L.	(0040) 68 - 258830
Russia	SAF-INTCOM	(007) 095 - 5799400
Republic of Slovakia	SAF Trade spol s.r.o.	(00421) 38 - 7601834
Slovenia	Otto Sauer Achsenfabrik Keilberg KG	(00386) 530 - 29213
Spain	SAF Otto Sauer Achsenfabrik Espana S.L.	(0034) 93 - 8468111
Sweden	Trailax AB	(0046) 36 - 169700
Switzerland	Willy Erny AG	(0041) 52 - 3372121
Turkey	INTERMOBIL A.S.	(0090) 212 - 2854364/65 (0090) 212 - 2862690/91
Yugoslavia	SAF Representative Office	(00381) 13520427

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